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Reports
Phillips, C

PRICES CHARGED BY PRIVATE PROVIDERS OF
OUTDOOR RECREATION OPPORTUNITIES

by
Clynn Phillips, et al.

Prices Charged by Private Providers of Outdoor Recreation Opportunities

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by

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SECTION 1: Setting and Objectives

Background

The Renewable Resources Planning Act (RPA) of 1974 committed the USDA Forest Service to "promote and achieve a pattern of natural resource uses that will best meet the needs of people now and in the future." ¹ The 1980 RPA Program statement served as the policy and planning guide for the agency's resource management activities through 1984. For reauthorization of the 1985 RPA, the Forest Service prepared a detailed plan of expected outputs and values from the lands the agency manages.

Two general methods were used to determine output values for the 1985 RPA Program. For those forest products that enter normal market channels, actual market price data, with appropriate adjustments, were used to calculate the specified 1985 values. Included in this category of products were timber, minerals, and commercial fish and wildlife outputs. Even though range/forage and water, two important forest products, are not sold directly in private markets, the markets or quasi-markets for privately owned range/forage and water were utilized in determining output values for these two resources.

The forest products of recreation, wilderness, and noncommercial fish and wildlife are not exchanged in established markets and, for the most part, neither are there well developed private markets for comparable private products. The 1985 RPA Program values for these amenity outputs were developed from a mix of existing willingness-to-pay studies. Sorg and Loomis,² working with a panel of experts, produced the first round of amenity resource output values. These values were adjusted in light of numerous methodological questions and political and administrative concerns.

Objectives

The Forest Service has taken a more systematic and comprehensive approach to develop estimates of amenity output values for the upcoming 1990 RPA reauthorization effort. Three approaches or accounting stances are being utilized to measure the contribution of amenity resources from Forest Service managed lands to national economic development (i.e., test for economic efficiency at the national level). The three stances have been defined ³(USDA, 1987) as (1) returns to the treasury (from fees, etc.), (2) market clearing values (estimated or actual), and (3) willingness to pay values (including estimates of consumer surplus).

Three separate studies were implemented to provide information on the second two stances. A national recreation demand and a

national recreation supply study, using data from the Public Area Recreation Visitors Survey (PARVS) and other sources.⁴ Cordell, (1992) This study, requested by the Assistant Secretary of Agriculture to determine what prices were being charged by private providers of outdoor recreation, hunting and fishing opportunities, was designed to collect data and information pertinent to the market-clearing price accounting stance or "transaction price" study. The study was conducted by a research team working out of the USDA Forest Service's Rocky Mountain Forest and Range Experiment Station in Fort Collins, Colorado.

The two major objectives were to:

1. Provide information on private-sector fees (i.e., transactions prices) being charged for 16 selected outdoor recreation, hunting, and fishing opportunities that are comparable to those provided by federal agencies.
2. Determine and compare the transactions prices being charged within the nine administrative regions of the USDA Forest Service.

In addition to the survey, five nationally recognized experts were commissioned to write special reports on various financial aspects of private recreation operations and the utility of using "market" prices to value public amenity goods and services.¹

Methodology

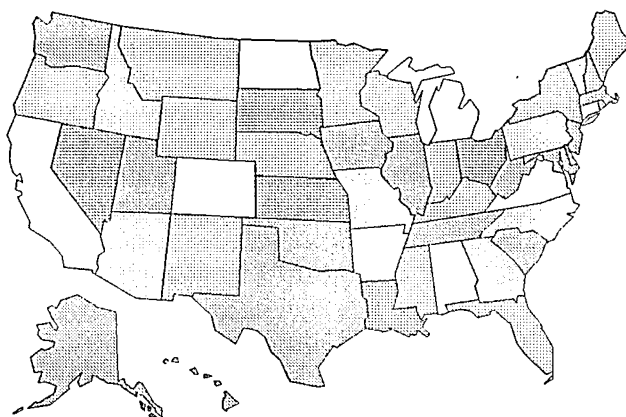
Forest Service officials in Washington D.C. had asked for transaction price data for 16 outdoor recreation activities for each of the nine Forest Service regions. The task of collecting transaction price data from private recreation providers operating across the continental U.S. was an ambitious undertaking. When the American Recreation Coalition was contacted with regard to possible sampling lists, it was learned that this organization was considering surveying their membership to collect information similar to what was needed for this effort. Realizing that a joint effort would benefit both studies, the American Recreation Coalition became a formal participant under a shared work arrangement. The American Recreation Coalition had decided to use a mail survey to collect information from the private recreation operators, thus, it was necessary to develop a large list of relevant names and addresses. In addition to membership

¹ Copies of their reports can be obtained from the Forest Service's Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

lists from the Coalition relevant to the study, numerous professional and business associations as well as several federal and state agencies were contacted and subsequently assisted the study team in compiling the sampling lists.

*****Map of USFS Regions needed*****

U. S. Forest Service Regions



Field managers with the USDA Forest Service, USDI Bureau of Land Management and National Park Service, and U. S. Army Corps of Engineers were ask to supply names and addresses of private recreation operators in their jurisdictional areas. This effort produced few names and addresses. The International Association of Fish and Wildlife Agencies requested names and addresses from all state fish and game agencies. The National Association of Conservation Districts provided help too by requesting names and addresses from its 3,000 districts. State departments of commerce, tourism or development were contacted and asked to provide lists and directories. Lastly, advertisements in outdoor recreation, hunting, and fishing magazines and promotional brochures were screened to increase the sample frame to slightly over 6,000 useful entries.

The Rand McNally Company made a data tape available (from their national campground register) to the USDA Forest Service for RPA planning purposes. The tape included price and service data for 6,330 private campgrounds in the contiguous 48 states. The Rand McNally tape represented a larger, more comprehensive data base than the study team felt could be developed with survey data although use of the tape meant that ownership and user information collected from other activity operators would not be available from operators of developed campgrounds.

Three alternative mail questionnaire forms (focusing on different but related types of opportunities) were developed and reviewed by the agencies participating in the study. (See Exhibit 1). They were pilot-tested in face-to-face interviews with six private providers, then revised and again pilot-tested in a mailing to 100 different types of operators (providing varying recreation opportunities) in different regions. When finalized, over 3,700 questionnaires were mailed initially, with the response rate varying by activity but averaging 15 percent overall. To increase response rates, the three questionnaires were shortened from 4 to 2 pages, and two more mailings were made. In total, about 5,500 questionnaires (both long and shortened forms) were mailed. An overall response rate of approximately 39 percent was eventually obtained. Roughly 900 nonrespondents were telephoned to identify reasons for nonresponse and to obtain basic fee data. Overall, a response was obtained from roughly 48 percent of the individuals on the original sampling list.

After the questionnaires were returned to the American Recreation Coalition and delivered to the Rocky Mountain Station, the responses were screened, coded and entered on computers in preparation for analyses. The Rand McNally data on private developed-site camping was analyzed as a separate project.

Eventually 6 of the 16 activities were dropped from further

analysis due to either limited sample sizes or noncomparability of the recreation opportunities provided, Table 1. Even so, the survey and subsequent analysis generated voluminous results. The results

Table 1: Activities with Adequate and Inadequate Sample and Survey Results.

Primary Activity	Sample Size
Adequate	
Big Game Hunting (elk, deer, and antelope)	275
Upland Game Bird Hunting (all species)	183
Waterfowl Hunting (duck and geese)	49
Cold Water Fishing (trout)	123
Warm Water Fishing (all species)	87
Cross-country Skiing	153
Rustic Camping	138
Nonmotorized Boating (rafts and canoes)	389
Swimming	63
Inadequate	
Hunting--small game	
Watercraft--motorized	
Driving vehicles off-road	
Gathering forest products	
Horseback riding	
Private land leased for recreation cabin sites	

presented in this report are limited to mean transaction prices nationwide and by region when sample size permitted. For some activities mean prices are reported for subgroups of operators who offered services and facilities that were most comparable to those offered by the federal agencies. For several activities, removing "noncomparable" surveys from the mean calculations was not an option as sample size would not support additional partitioning.

SECTION 2: Conceptual Framework

Frequent reference was made to free market prices and fair market values in scoping meetings with the Washington Forest Service staff who had responsibility for this project. John Fedkiw, Associate Director of Renewable Resources and Special Studies, U.S. Forest Service, endorsed the concept of basing resource values on equilibrium prices. In a paper delivered at a symposium on natural resources, he uses the terms equilibrium price and fair market value interchangeably.⁵ (Fedkiw) Mr. Fedkiw also argued, with appropriate documentation, that fair market value is defined in terms of free market prices. That the price or value of products produced on the public lands should be "determined commensurately" with the value of other products with which the products from public lands compete. He concludes that the concept of free market prices should be the norm by which public land resource values should be judged. Also, that values based on other than free market prices will lead to economic inefficiencies.

Perfect Competition Model

Although the study effort was never directed to adopt a specific model or criterion, it seemed clear that long-run equilibrium prices under perfectly competitive market (PCM) conditions were to represent the norm by which amenity resource values were to be estimated and judged. Pragmatically, it is easier to define than to identify or determine long-run equilibrium prices. In the short-run, firms will continue to produce and sell output for prices less than the equilibrium price and they will produce and sell products at prices above the equilibrium price. It would be difficult to evaluate the price charged by a particular firm against a theoretical long-run equilibrium price without having detailed cost data for the observed firm and all other industry firms in the relevant market. The relevant market could be local, regional or national.

In general, the PCM model characterizes a free or open market with many buyers and sellers, each buying or selling quantities so small relative to the total market that the actions of any one buyer or seller has no perceptible influence on market price. The long-run equilibrium price is at a level that covers all costs, fixed and variable including an allowance for a fair return on investment. The PCM model also assumes that all resources, labor and management included, used in the production of the target good are purchased in open, competitive markets. New firms are free to enter, existing firms are free to exit the industry as market conditions dictate.

The essence of the above assumptions is that the long-run price for a good or service exchanged in a PCM would be at, or moving toward, an equilibrium level. That is, price would be at a level that covers all costs of production and provides the owners of producing firms a competitive rate of return on their investment. There would be no pressure on owners and investors to cease operation and to move their investment dollars to some other investment alternative. Since the equilibrium price covers all costs, including opportunity costs, but no more, new firms would not be attracted into the industry because established firms were perceived to be earning unusually high profits.

If an industry was in long-run equilibrium and for some reason all producing units were destroyed, the industry would be rebuilt to the same capacity as investors would not find better investment alternatives and neither would outside firms rush in to fill the void as those firms would be earning competitive returns with their present product lines. If price for an industry was below its long-run equilibrium level and all producing units were somehow destroyed, the industry would be rebuilt to a lower capacity level as some firms would take advantage of the opportunity to leave the industry. If price was higher than the long-run equilibrium price and all producing units were destroyed, all previous firms would be expected to rebuild as well as new firms would be attracted to the industry by the higher than usual profits that the previous firms had been earning. In short, when an industry is in equilibrium there is neither pressure to expand or to contract.

A practical and useful test for the transaction price data reported in this study is to contemplate what adjustments in industry capacity might occur if all current producing units were destroyed or ceased to operate for some reason. If it can be expected that the industry essentially would rebuild to the same capacity, the present market price would be close to the long-run equilibrium price.

Adoption of the perfectly competitive model does not mean that we expect to find recreation markets that satisfy the requirements of the model. Neither does it mean that the analysis will be limited to those markets and activities that meet or come close to meeting the model requirements. Where pertinent, the assumptions of the perfectly competitive model will be discussed in a descriptive sense with regards to market organization and structure for the various activities. The principal application will be in evaluating the transaction price data collected in the survey of private recreation operators against the criterion of long-run equilibrium prices.

Economic theory can be used to show that the market demand curve, the summation of all individual demand curves, for a good or service or a recreation opportunity also represents the social marginal benefit for the product. The theory presumes one of two assumptions applies: either (1) there are no external consumption benefits or (2) if there are, those benefits have been internalized.⁶ (Maurice and Phillips) The market demand curve,

under these conditions, represents the perceived social benefit to be gained from the consumption (or ownership) of each successive unit of output. To the extent that consumers are aware of the relative benefits they would derive from various consumption alternatives and that benefits accrue only to consumers, then the market demand curve represents the social value attributable to each successive unit of the product that is produced.

Assuming external costs of production are nonexistent or that they have been internalized, a parallel argument can be made for the market supply curve. That is, the supply curve represents the social value attributable to the resources used to produce each successive unit of output. When PCM conditions are met and prices are established in open markets where demand and supply curves interact freely, the social value for the last unit produced is equal (or very nearly so) to the social value of the resources that were used in the production of that unit.

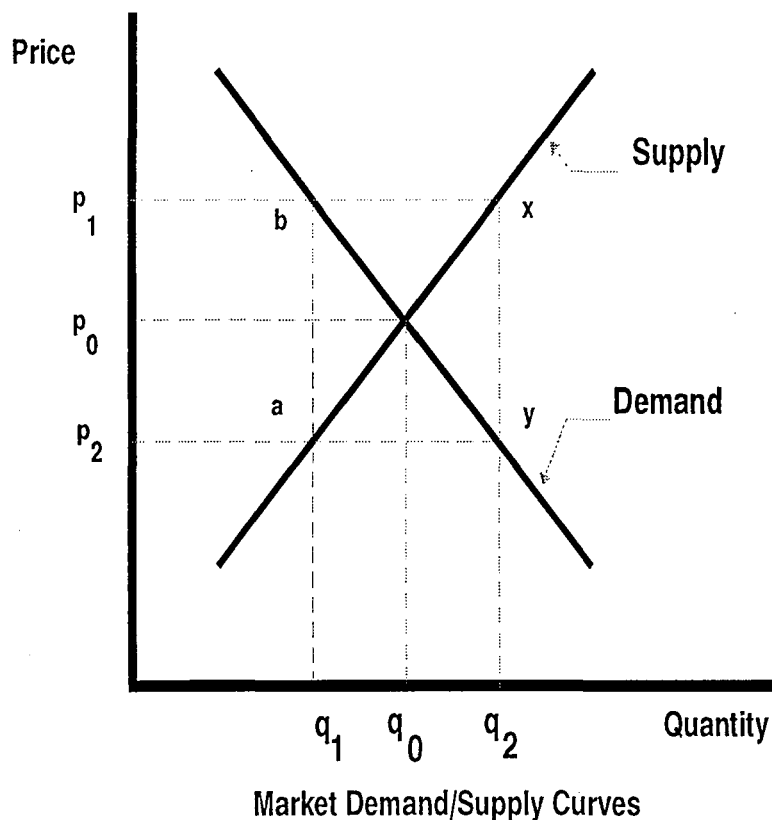
The simplistic assumption that the intersection of market demand and supply curves identifies efficient prices and market conditions may be challenged on equity grounds.⁷ (Johnson) Notwithstanding these arguments, economists generally consider the equilibrium price and quantity in competitive markets to be efficient. As Reiling and Anderson state "It is widely accepted by economists that the prices and quantities derived from purely competitive markets result in the most efficient allocation of society's scarce resources, all other things being equal".⁸ (Reiling and Anderson)

The economic criterion for efficiency is a welfare concept that requires resources to be allocated among competing economic activities consistent with the social values attributable to the products of those activities. The concept of efficiency can be illustrated with the graphs shown in Figure 1. The left or market graph shows equilibrium conditions for a competitive market. Equilibrium price occurs at the intersection of the marginal social benefit and marginal social cost curves. At the equilibrium price and quantity, the value or benefit of the last unit purchased (Q) is just equal to the social value attributed to the resources used in the production of that unit. If production is less than Q , say Q_1 , the product is valued (P_2) much higher than are the resources (P_3) that were used to produce it. The worth of the whole is greater, in this case, than the sum of all its parts (resources). If production is greater than Q , say Q_2 , the product or good is valued at P_3 whereas the resources used to produce it were valued at P_2 . Insofar as society is concerned, the worth of the whole is less, in this instance, than the sum of all its parts. Production beyond the equilibrium quantity reduces the combined value of the input resources.

At quantities less than equilibrium, resources are being used to produce products that are of less value to society than they would be had those resources been used to produce the focus product. Society would realize an increase in net benefits,

without increasing total resource use, by withdrawing resources from other uses and redirecting them to the focus product. Society is realizing less than full benefit from the current level of resource use or it can be concluded that the current allocation of resources is inefficient. The same rationale applies to production to the right or beyond the equilibrium quantity but in reverse order. Since resources used in the production of the focus product beyond the equilibrium quantity would be valued more by society in the production of other goods, society could again realize a gain in net benefits by directing resources away from the focus good and into uses with higher marginal net benefits. There is opportunity for gain in net benefits without increasing total resource use. Production beyond equilibrium, like production below equilibrium, represents an inefficient use pattern of available

Figure 2



resources. Equilibrium analysis defines the conditions for efficiency but it does not demonstrate why economists generally consider competitive markets to be the economic environment that

will yield those conditions. That relationship will be the topic of the remaining theoretical discussion.

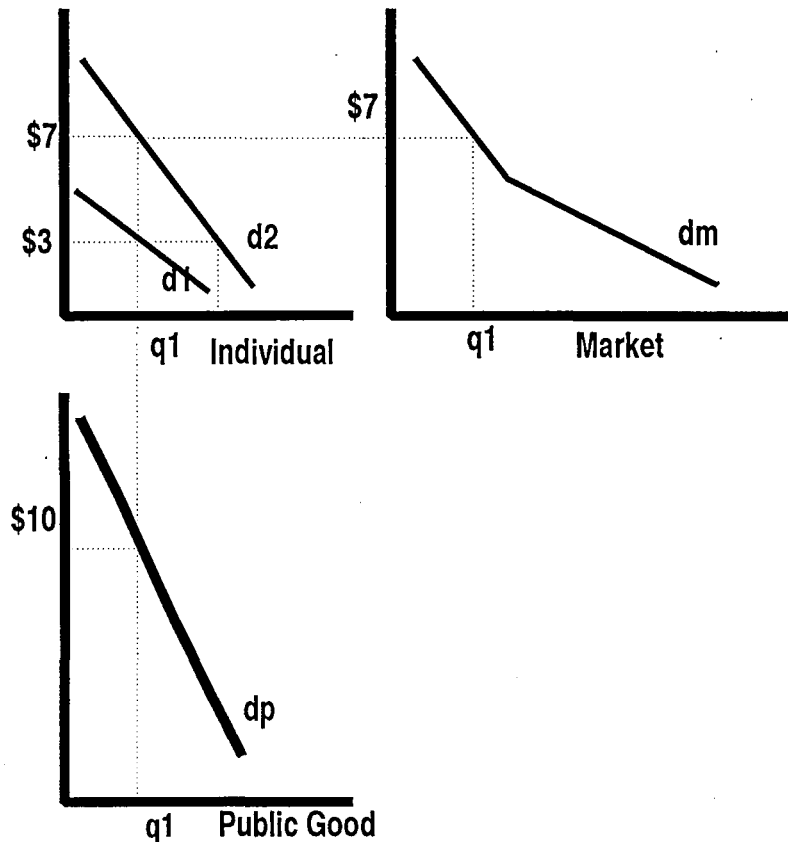
In the context of economic efficiency, monopoly and other imperfectly competitive market forms represent potential weaknesses in the system that society depends on to supply its wants and needs. The extent of our concern with these market forms is related to the capacity each form has to stray from the norms of the perfectly competitive market. In the context of this study effort, monopoly prices overstate the value society would attribute to a recreation service produced under equilibrium conditions in a perfectly competitive market.

Public Goods

There is a class of goods closely associated with recreation that competitive markets have little or no capacity to adequately provide. The class of goods commonly referred to is public goods. According to Stiglitz, public goods have two critical properties.⁹ (Stiglitz) First, there is no additional cost to an additional individual enjoying or benefiting from the good. Secondly, it is difficult and perhaps impossible to exclude individuals from the benefits associated with public goods. The inability of public good providers to exclude individuals from the enjoyment of this class of goods essentially removes private enterprise as a provider. The commercial provider is without an effective means of recovering the cost of the good if the public can not be excluded.

A definition of public goods frequently used in association with the public goods that produce recreation benefits is that the consumption by one individual does not diminish the quantity available for others to enjoy. This definition seems to provide better perspective into the value issues related to public goods than the discription offered in the above paragraph. The essence of those issues are presented in Figure 2. The graph labeled individual in Figure 2 shows hypothetical demand curves for two individuals. If the two demand curves represented normal goods, where property rights could be assigned and enforced, market demand and value for the two goods could be estimated by aggregating the separate demand curves. The value for a single unit of a normal good is linked to the separate values that individuals have for the product. This result follows from the exclusion property. If a private entity can produce the good at a unit cost within the willingness to pay range of individuals, production will occur with quantities provided to satisfy the wants of all individuals whose willingness to pay exceeds cost of production. These demands are shown in graph b as a horizontal summation of the individual demands represented in graph a.

Figure 3



The value of a public good is above the value that an single individual would be willing to pay for the good. Inasmuch as the quantity of the public good is not diminished by the use of any one individual, its value is equal to the combined individual values of all those who use and enjoy it. In Figure 2, that value is shown in graph c as the vertical summation of the two demand curves in graph a.

The social marginal benefit for public goods, as represented by graph c, generally would be much higher than the value private enterprise would be willing to commit to its production. Placing a value on public goods related to the values private markets would attribute to those goods would result in a gross error from the standpoint of efficiency.

Joint Products

The resource base for many outdoor recreation opportunities is defined in terms of a physical setting that has certain geographic and environmental amenities. The quantity and quality of various recreation settings is generally related to the stock

and flow rates of other natural resources. Altering the stock of timber on a forest can improve the setting for some recreation activities and diminish the setting for others. Altering stream flow regimes can drastically change the setting for water-based recreation activities. Changes in cropping patterns and land use practices generally have an effect on recreation opportunities, also.

The joint production relationship between recreation and other natural resources combined with the nonconsumptive, noncompetitive nature of recreation use (at least over a limited range) causes many landowners to view the recreation potential of their lands as a free good. Recreation is considered a by-product of other land use activities or part of the naturally endowed capacity of the land. In either case, production costs would not be evident to the landowner until recreation use became competitive with other uses. The costs landowners would associate with recreation would be those expenses incurred in allowing the public to use their lands. In other words, landowners probably have been willing to supply recreation opportunities at less than full production costs. (Johnson, 19??) (Reiling and Anderson, 19??)

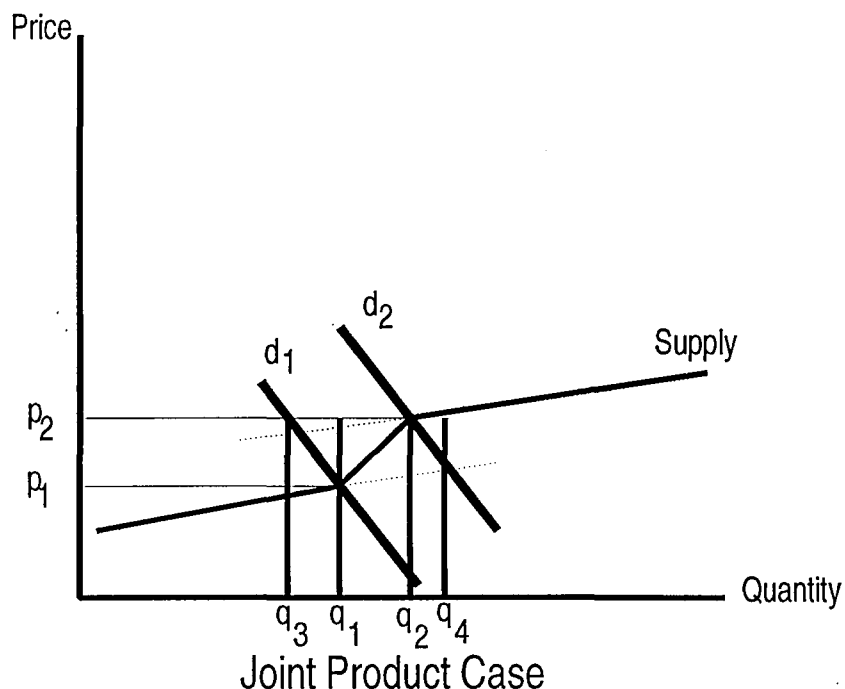
The joint product/joint cost nature of recreation creates problems for the concept of long-run equilibrium. A hypothetical joint product supply curve is presented in Figure 4. That portion of the supply curve Q_0 to Q_1 represents the range of recreation opportunities that would be provided by landowners for prices that cover the out-of-pocket expenses incurred in allowing the public to access their lands. At some point, the demand for recreation opportunities will exceed the level supplied as by-products to other natural resource management and use patterns or recreation use will expand and intensify until it becomes competitive with other users. When either of these conditions occur, landowners will provide additional recreation opportunities only if the full cost of producing the additional opportunities are covered. The upward step in the supply curve Q_1 to Q_2 represents the cost adjustment that will occur as the demand for recreation pushes supply beyond the maximum output of free or low-cost joint product level. There would be a sharing of joint costs for recreation opportunities beyond Q_2 , or perhaps recreation would become the primary activity and would be expected to cover the full complement of fixed and variable production costs.

There is substantial evidence that the lower or low-cost portion of the supply curve applies to many outdoor recreation activities. The increased numbers of commercial recreation providers suggests that for some activities demand is at or is

approaching the level where recreation is expected to cover full production costs. It is difficult to define a long-run equilibrium price under these conditions. It is likewise difficult to evaluate the appropriateness of transaction prices as measures of resource value without knowing where the current supply of recreation opportunities is in relation to the hypothesized upward step in the supply curve. If the lower portion of the supply curve will provide needed recreation opportunities through the current RPA planning horizon, it is reasonable to define long-run equilibrium in terms of costs included in the low-cost portion of the curve. If, on the other hand, demand is at or near the upward step portion of the supply curve, current transaction prices would be an inappropriate indicator of resource values.

Figure 4--Joint Product Case.

Figure 4



Value issues relating to joint-cost supply curves cannot and should not be resolved by just estimating prices for the upper or full cost portion of the supply curve. The reason becomes evident when examining the participation adjustments that likely will occur as price moves from the lower portion to the higher portion of the supply curve. To illustrate the problem,

reasonably elastic demand curves were drawn on Figure 4. If the upper portion of the supply curve was to be extended to the left, it would intersect demand curve d_1 close to the P_2 level of price. At price P_2 , participation would be reduced to Q_3 , creating excess capacity $Q_3 - Q_1$. Depending on the elasticity of the demand curve, the jump to a price of P_2 or above could result in an excess capacity of recreation opportunities over and beyond the RPA planning period.

Ironically, the use of higher recreation prices, like P_2 will increase the relative size of the present net value for recreation which will, consequently, lead to an increase in the provision of recreation opportunities in the RPA planning scheme. If the price increase has more than a marginal effect on quantity demanded or quantity supplied, the increase could have an opposite and overriding effect from the anticipated result. In short, transaction prices need to be carefully screened and evaluated for private sector recreation opportunities that are supplied as a joint production effort.

Application

Although it is impractical to objectively test the price information that will be collected via the survey against calculated long-run equilibrium prices, the data can be subjectively screened. Respondent owners and managers were asked to indicate the basis for the fees they charge (how were fees established), the categories of costs they consider in setting fees and whether they feel the fees charged were covering the full cost of providing the recreation opportunities offered.

It will be important to determine for those activities where the number of private providers is limited and there is little, if any, evidence of a formal market whether the recreation service is offered, in part, as a good-will gesture with fees set to cover only part of the costs of providing the opportunity. There may be instances where the recreation opportunity is produced as a by-product of some other economic activity and the private operator is only attempting to recover the costs of accessing and managing the resource being utilized. (Johnson) (Rieling and Anderson) Those costs do not represent the full cost of providing the service.

The values assigned to the outputs or products produced by USFS and other publicly administered lands serve the equivalent role of prices in a private investment feasibility study. To use recreation values for RPA and other federal agency planning purposes that cover less than the full cost of providing the recreation service is tantamount to undervaluing the activity. The claims these undervalued activities will have on resources via planning and programming decisions will be understated. Production of recreation opportunities for the undervalued activities on federally managed lands will be less than optimal. The production of other forest products (timber, livestock,

minerals, etc.) will be subsidized by recreationists.

It is possible that the survey of private recreation operators could request transaction price data at a time when the market price was above the long-run equilibrium price. The above equilibrium price could be the result of short-run aberrations in the market or markets subject to some degree of monopoly influence. Regardless of the reason, the above equilibrium price would overstate the social marginal benefit of the activity, i.e., the value of the recreation activity would be overstated. Special studies will be conducted for a limited number of activities to examine the relationships between current prices, equilibrium prices, cost accounting systems and other considerations that should be included in the determination of recreation resource and activity values.

Another concern relates to differences in levels of development and service that might exist between the typical privately provided recreation opportunity and that same opportunity provided on the federal lands. The activities that will be surveyed represent those activities from the RIM recreation categories that were considered most likely to be offered by private providers. The list was also screened to remove those activities dependent upon developed facilities generally not provided by the federal agencies, such as downhill skiing. As a guideline, the survey will be targeted at private businesses, operating on privately owned land.

We were concerned that an attempt to collect detailed information on operators' costs of production would reduce the response rate and ultimately increase the time and cost of the study. Several nationally known experts were commissioned to provide better information on: the relative competitiveness of the recreation sectors studied; relationships between current and long-run equilibrium prices; cost-accounting systems used by the operators; and considerations such as the appropriateness of using transactions prices as values for publicly provided amenity goods and services.

Our adoption of the PCM model and long-run equilibrium price as a norm has several implications for public policy analysts.

1. If all costs, including fixed cost, should be covered by the price/value, how will the joint costs be allocated? How will the allocation affect equilibrium price and quantity?
2. Should all fixed costs, especially land costs, be considered, or alternatively is the PCM model too short-term in orientation for public decisions, meaning that some fixed costs should be borne intergenerationally?
3. Are some public amenity goods and services (e.g., nonconsumptive use of wildlife) public rather than private goods? If so, how relevant are long-run equilibrium prices and the PCM model?

4. Do some allocations make nonmarginal changes in prices, meaning the "market demand curve" is not horizontal? If so, should market-clearing prices be used at all?
5. What utility do the transactions price data have when the attributes (i.e., services, facilities, quality) of the private amenity-goods services are not comparable to those of the publicly provided good or service?
6. If the recreation sectors studied are not operating in PCMs or are not pricing to break even in the long-run, is any information provided about the prices being charged really useful -- and might it not be detrimental -- to public agency valuations of similar goods or services?

SECTION 3: Survey Results

As described earlier, transaction price data were collected for ten of the sixteen outdoor recreation activities Forest Service officials in Washington D.C. had originally identified. Tables 2 through 10 that follow contain summary results for nine of the ten activities (developed-site camping is discussed in Section 4). The information in these tables were obtained using the combination of mail and telephone surveys described in the methodology section. The objectives of this study would have been best served had we been able to collect transaction price data from private providers who offered activities comparable in level of service and development to the activities available on federally managed lands. It would have been desirable also to have had sufficient data to have made independent transaction price estimates for each of the nine relevant Forest Service Regions. In reality, many, if not most, private operators offered recreation opportunities with more service and facilities than is typical of the opportunities available on federal lands. When possible, the data from the surveys was segregated by level of service and facilities included in the respective prices. The Tables, when appropriate, present the transaction price estimates in descending order of the level of service and facilities included.

There was wide disparity region to region in both the number of private recreation providers and the type of opportunities offered. Separate estimates for the respective regions are presented in the activity tables when such estimates could be supported by the data base.

The last of the ten activities included in this report, developed-site camping, was treated differently for analytical purposes than the nine survey activities. The data tapes developed in conjunction with the campground guidebooks published by the Rand McNally Corporation were made available to this study effort. We considered the information available on these tapes to be superior in detail to information that could be collected through a survey. In addition, the number of campgrounds included on the Rand McNally tapes exceeded the number of campground operator responses that we could have hoped for by a factor of three to four. Use of the Rand McNally tapes necessitated a different analytical approach from that used with the survey data. Section 4 of this report discusses develop-site camping.

Several explanations are needed though.

2. Extreme values (i.e., outliers) were dropped from the

entire data set for each activity in Tables 2 through 10. In the results reported in Chapters 4 through 12, additional extreme outliers were excluded from analyses of some subsamples. Dropping those outliers from the subsamples was a matter of judgment and not considered pertinent to the values reported in Tables 2 through 10.

3. For most activities represented by Tables 2 through 10, limited sample sizes prevented partitioning out all services and facilities that were covered in the basic fee but which are not generally provided by federal agencies for those activities. Thus, the desired level of comparability was seldom achieved. It was best approximated for those activities which show the category "No Services or Facilities Provided" under the left-hand column labeled "Segmentation." However, the "No Services or Facilities Provided" segment might include outfitting, as footnoted. This most restrictive partitioning could usually be done only for the nationwide level of analysis and not by regions.
4. Though heroic efforts were made to develop lists of names and addresses that included only operators who provided opportunities comparable to those of federal agencies, many--if not most--of the respondents did not provide comparable opportunities. This situation occurred for two reasons. First, in their desire to be helpful, the people providing names and addresses included many noncomparable operations, which could not be detected before the questionnaires were mailed. Second, the most commercial operations showed the highest response rates, with farmers and ranchers (many of whom charge just access fees) having lower response rates for several reasons, including fear of disclosure of price, revenue and cost data. In sum, the sample of respondents was biased toward those who did not offer activities comparable to those provided by federal agencies. This confounded the task of partitioning out those extra services and facilities in the face of limited sample sizes, especially for the regional analyses.

Table 2: Big Game Hunting Prices (per person per day)

Sample Category	Item	Nation-wide ^a	By Forest Service Regions ^b				
			R 1	R 2	R 3-5	R 8	R 9
Overall	$\bar{X}$	\$224	\$227	\$208	\$284	\$175	\$75
	SD	\$111	\$95	\$76	\$113	\$5	\$18
	N	186	60	56	33	22	9
Antelope	$\bar{X}$	\$205					
	SD	\$68					
	N	58					
Deer	$\bar{X}$	\$222					
	SD	\$117					
	N	167					
Elk	$\bar{X}$	\$252					
	SD	\$126					
	N	109					
Outfitting/ guiding provided	$\bar{X}$	\$238					
	SD	\$104					
	N	143					
No guiding provided	$\bar{X}$	\$161	\$157	\$143	\$239	\$158	\$63
	SD	\$94	\$87	\$55	\$124	\$95	\$19
	N	41	15	10	6	5	4
All private ownership ^c	$\bar{X}$	\$209	\$209	\$231	\$297	\$162	\$86
	SD	\$122	\$136	\$100	\$107	\$75	\$8
	N	60	10	14	7	21	5
Mostly public ownership ^d	$\bar{X}$	\$226					
	SD	\$101					
	N	113					

^a "Nationwide" denotes the entire sample regardless of whether some regions were represented well or not at all.

^b No analyses were made for regions with small sample sizes. Some regions were combined to increase sample size.

^c These categories refer to the ownership of the land, water and/or facilities used for the designated activity.

Table 3: Upland Game Bird Hunting Prices (per person per day).

Sample Category	Item	Nation-wide ^a	By Forest Service Regions ^b		
			R 2	R 8	R 9
Overall	$\bar{X}$	\$136	\$130	\$165	\$94
	SD	\$72	\$62	\$76	\$54
	N	94	31	37	21
No guiding provided	$\bar{X}$	\$103	\$92	\$125	\$80
	SD	\$59	\$58	\$63	\$47
	N	44	9	19	15
No camp sites/ lodging/meals/ transportation/ or guiding provided	$\bar{X}$	\$102			
	SD	\$62			
	N	34			
Mostly private ownership ^c	$\bar{X}$	\$142			
	SD	\$73			
	N	83			
Mostly public ownership ^c	$\bar{X}$	\$79			
	SD	\$40			
	N	10			

^a "Nationwide" denotes the entire sample regardless of whether some regions were represented well or at all.

^b No analyses were made for regions with small sample sizes.

^c These categories refer to the ownership of the land, water and/or facilities used for the designated activity.

Table 4: Waterfowl Hunting Prices (per person per day).

Sample Category	Item	Nation-wide ^a	By Forest Service Regions ^b	
			R 9	
Overall	$\bar{X}$	\$77		\$67
	SD	\$48		\$39
	N	35		27
No guiding provided	$\bar{X}$	\$43		
	SD	\$32		
	N	16		
No services or facilities provided ^c	$\bar{X}$	\$47		
	SD	\$35		
	N	10		
All private ownership ^d	$\bar{X}$	\$74		\$64
	SD	\$47		\$38
	N	28		23
Mostly public ownership ^d	$\bar{X}$	\$93		
	SD	\$54		
	N	7		

^a "Nationwide" denotes the entire sample regardless of whether some regions are represented well or at all.

^b No analyses were made for regions with small sample sizes.

^c But outfitting might have been provided.

^d These categories refer to the ownership of the land, water and/or facilities used for the designated activity.

Table 5: Warm Water Fishing Prices (per person per day).

Sample Category	Item	Nation-wide ^a	By Forest Service Regions ^b	
			R 8	R 9
Overall	$\bar{X}$	\$4.70	\$2.90	\$5.60
	SD	\$6.40	\$2.70	\$8.30
	N	53	20	27
No services or facilities provided ^c	$\bar{X}$	\$4.00	\$2.90	\$4.60
	SD	\$5.30	\$2.90	\$6.70
	N	44	16	24
All private ownership ^d	$\bar{X}$	\$3.40		
	SD	\$2.80		
	N	47		
Mostly public ownership ^d	$\bar{X}$	\$14.90		
	SD	\$14.70		
	N	6		

^a "Nationwide" denotes the entire sample regardless of whether some regions are represented well or at all.

^b No analyses were made for regions with small sample sizes.

^c But outfitting might have been provided.

^d These categories refer to the ownership of the land, water and/or facilities used for the designated activity.

Table 6: Cold Water Fishing Prices (per person per day).

Sample Category	Item	Nation-wide ^a	By Forest Service Regions ^b		
			R 1&6	R 2-5	R 8&9
Overall	$\bar{X}$	\$52	\$81	\$50	\$25
	SD	\$47	\$41	\$47	\$36
	N	71	22	26	23
Outfitting/ guiding provided	$\bar{X}$	\$88			
	SD	\$33			
	N	20			
No services or facilities provided	$\bar{X}$	\$40	\$87	\$31	\$10
	SD	\$46	\$32	\$46	\$19
	N	42	12	16	14
All private ownership ^c	$\bar{X}$	\$5			
	SD	\$3			
	N	22			
Mostly public ownership ^c	$\bar{X}$	\$80			
	SD	\$42			
	N	31			
Mostly public ownership, no guiding provided	$\bar{X}$	\$65			
	SD	\$50			
	N	14			

^a "Nationwide" denotes the entire sample regardless of whether some regions are represented well or at all.

^b No analyses were made for regions with small sample sizes. Some regions were combined to increase sample size.

^c These categories refer to the ownership of the land, water and/or facilities used for the designated activity.

Table 7: Cross-Country Skiing Prices (per person per day).^a

Sample Category	Item	Nation-wide ^a	By Forest Service Regions ^b		
			R 1&6	R 2-5	R 8&9
Overall	$\bar{X}$	\$6.60	\$7.70	\$7.20	\$6.30
	SD	\$6.00	\$7.00	\$6.00	\$5.50
	N	127	41	30	83
Mostly private ownership ^c	$\bar{X}$	\$5.50	\$5.30	\$4.80	\$5.70
	SD	\$2.90	\$3.10	\$2.40	\$2.80
	N	65	12	8	52
Mostly public ownership ^c	$\bar{X}$	\$7.90	\$8.70	\$8.00	\$7.50
	SD	\$8.10	\$7.90	\$6.70	\$8.70
	N	59	29	22	28

^a "Nationwide" denotes the entire sample regardless of whether some regions are represented well or at all.

^b No analyses were made for regions with small sample sizes. Some regions were combined to increase sample size.

^c These categories refer to the ownership of the land, water and/or facilities used for the designated activity.

Table 8: Rustic Camping Prices (per campsite per day).

Sample Category	Item	Nation-wide ^a	By Forest Service Regions ^b		
			R 1,6&10	R 2-5	R 8&9
Overall	$\bar{X}$	\$8.00	\$8.10	\$8.40	\$7.90
	SD	\$2.80	\$3.00	\$3.10	\$2.60
	N	112	20	25	65
No bath, shower, electricity, dump, or pools provided	$\bar{X}$	\$7.80			
	SD	\$2.80			
	N	48			
Only campsites and marked trails provided	$\bar{X}$	\$8.00	\$8.40	\$8.60	\$7.60
	SD	\$2.80	\$2.80	\$3.20	\$2.60
	N	45	12	9	24
Mostly private ownership ^c	$\bar{X}$	\$8.40			
	SD	\$2.60			
	N	92			
Mostly public ownership ^c	$\bar{X}$	\$6.40			
	SD	\$3.00			
	N	19			
Mostly private ownership Only campsites & marked trails provided ^c	$\bar{X}$	\$8.30			
	SD	\$2.80			
	N	36			

^a "Nationwide" denotes the entire sample regardless of whether some regions are represented well or at all.

^b No analyses were made for regions with small sample sizes. Some regions were combined to increase sample size.

^c These categories refer to the ownership of the land, water and/or facilities used for the designated activity.

Table 9: Nonmotorized Boating Prices (per person per day).

Sample Category	Item	Nation-wide ^a	By Forest Service Regions ^b		
			R 1,6&10	R 8-9	R 9
Overall	$\bar{X}$	\$57	\$72	\$37	\$40
	SD	\$36	\$33	\$29	\$29
	N	206	114	88	64
No guiding provided	$\bar{X}$	\$41	\$69	\$23	\$26
	SD	\$38	\$41	\$22	\$26
	N	79	30	47	33
Only boat launch sites	$\bar{X}$	\$65			
	SD	\$40			
	N	39			

^a "Nationwide" denotes the entire sample regardless of whether some regions are represented well or at all.

^b No analyses were made for regions with small sample sizes. Some regions were combined to increase sample size.

Table 10: Swimming Prices (per person per day).²

Sample Category	Item	Nation-wide ^a
Overall	$\bar{X}$	\$2.20
	SD	\$1.10
	N	43
Outdoor recreation questionnaire	$\bar{X}$	\$2.30
	SD	\$1.00
	N	16
Swimming and boating questionnaire	$\bar{X}$	\$2.20
	SD	\$1.20
	N	27

^a "Nationwide" denotes the entire sample regardless of whether some regions are represented well or at all. No analyses were made by regions because of too small sample sizes.

² Swimming was seldom listed as a primary activity for which operators charged a fee. Rather, it was generally bundled with some other (primary) activity as an added attraction. Only 63 respondents (23 operators responding to the general Outdoor Recreation questionnaire and 40 operators who responded to the Swimming and Boating questionnaire).

Costs and Fees

Although respondents were asked to answer several questions pertaining to operating costs, the number of such questions needed to be limited to avoid reducing the response rate. Thus, caution should be used in drawing conclusions about the operating cost data collected. The data, from questions 7 through 12 on the survey form, summarized in Table 11 indicate that the sensitivity of the operators to various cost factors varied from activity to activity. Relatively few respondents indicated their fees were set to cover both variable and fixed (including land) costs. For example, Table 11 shows that only (Question 11) 6 to 45 percent of the big game hunting operators reported they set fees to cover all costs. Also, notice from Question 12 that 26 to 48 percent reported that their current fees would not cover all costs if they had to start from scratch. Relevant too, are the answers to Question 10 where only 14 to 27 percent of the respondents indicated they set fees primarily to cover their costs including inflation. Taken at face value, the responses to Question 10 and 11 suggest that fees in general would be lower than long-run equilibrium prices. It is possible though that some opportunities are provided as a joint product, say with production of beef. If so, such operators might logically exclude some cost categories that other operators which provided only recreation opportunities would consider legitimate and necessary to cover. Of course, our normative posture that all relevant variable and fixed (including land) costs should be covered by the fee charged might be relaxed by public policy analysts when attempting to apply our results to valuations of public amenity goods and services.

Table 11: Responses to selected questions regarding cost-accounting, fee setting, and land ownership. All responses are in percentages of total nationwide respondents offering the designated activities.

Question	Hunting			Fishing		X-C Skiing	Non- Rustic Camping	Motor Boat	Swimming
	Big Game	Upland Bird	Water- fowl	Warm Water	Cold Water				
Percent that the land or water is:									
Owned	45	74	45	78	50	53	73	36	81
Managed for owner	7	7	4	3	7	8	7	3	3
Leased	38	32	57	10	26	41	9	22	11
Other	4	2	2	1	3	8	7	11	3
Percent that set fees mostly by:									
What is Fair	38	37	39	40	24	21	24	25	41
What Others Charge	17	15	22	22	24	20	19	23	13
Cover Costs	27	25	14	17	21	20	19	22	25
What Market Will Bear	7	7	10	5	4	9	7	7	11
Other	11	17	14	16	27	30	32	23	10
Fees set to cover:									
All costs	45	34	6	13	25	19	20	42	30
All Costs But Land	27	30	25	23	24	20	23	18	35
Out-of-Pocket Costs	17	20	51	45	24	33	20	17	21
Other	11	16	18	20	27	29	37	22	14
Percent that said if they had to start from scratch, fees would cover all costs	48	40	39	35	33	26	31	32	30
Sample Size	275	183	49	87	123	153	138	389	63

SECTION 4: DEVELOPED-SITE CAMPING

General Approach

It is known that private campgrounds generally charge higher base fees (i.e., fees for camping without inclusion of fees for additional services or facilities) than do the federal agencies. We attribute this difference to more competition within the private camping industry and the need of those firms to make a profit -- including their need to cover the costs of extra services and facilities not provided by the federal agencies. The private campground operators also need to amortize land costs, which on the average should be higher than the market value of land on which most federal developed-site campgrounds are located. This assumes the owners of the private campgrounds are cost-conscious and concerned about long-run breakeven pricing.

Given the above considerations, the task was to estimate "transactions prices" by region for private developed-site camping opportunities that are comparable to those provided by federal agencies. The basic approach was to subtract from the private campground base fees the amounts private operators needed to include in their base fees to cover costs of services, facilities and land that are not applicable to the federal agencies' developed-site camping opportunities. Assume for simplicity that the average base fee for all private campgrounds was \$8.00 and that the only cost-related difference between all private and federal campgrounds was the provision of electrical hook-ups at a cost of \$1.00 per night. Then, the appropriate transactions price would be the \$8.00 average private base fee minus \$1.00, or \$7.00. This will be called the "adjusted base fee" and will represent our estimate of a "transaction price" for comparable federal agency campgrounds.

To begin the analysis, much time was spent in "cleaning up" the data to make it internally consistent and to correct apparent errors. Then a "heuristic" (trial and error) approach using linear regression analysis was taken to separate out the influence on base fee (the dependent variable) of particular services, facilities and land costs (the independent variables, practically all of which were binary dummy variables). A probability (a) of 0.10 was chosen to test statistical significance.

Unlike common use of regression analysis, our central interest was not in developing a predictive model that would use the coefficients of the independent variables to predict the impact of those variables on base fee. Instead, with only a few exceptions all of the independent variables we considered represented facilities or services not present in federal, developed-site campgrounds. By treating the published (Rand McNally data tape) campground fees as dependent variables and the binarily coded (present or absent) services and facilities as independent variables, the constant term in the regression equation can be interpreted as a statistically adjusted base fee. The adjusted base fee should be one that excludes what the private operators would need to charge to cover the cost of the facilities and services or independent variables they offer in their respective campgrounds and a fee that hypothetically would cover the long-run costs of a "no-frills" USFS campground. To illustrate, in the regression equation

$$p = c + b_1x_1 + b_2x_2 + b_3x_3$$

where; p = price (Campground fee)

x_1 = shower facility

x_2 = electrical hookups

x_3 = sewer hookups

then; b_1 = the \$ influence of showers on the campground fee.

b_2 = the \$ influence of electrical hookups on the campground fee.

b_3 = the \$ influence of sewer hookups on the campground fee.

and; c = the base fee or that portion of the campground fee that would cover the costs of a basic campsite.

Suppose further that after running regression analysis on a group of campgrounds the resulting equation was;

$$12.50[p] = 7.15[c] + 2.3x_1 + 1.15x_2 + 1.9x_3.$$

We would conclude that the average fee for the group, with facilities and services provided, was \$12.50 with \$2.30 attributable to the cost of the shower facility, \$1.15 attributable to the cost of providing electrical service and \$1.90 assignable to the cost of providing sewer services. The balance, \$7.15, would be that portion of the fee that covers fixed costs (land costs and site construction costs) and operating costs not covered by the special facility an service charges. In other words, the estimated base fee for this group of campgrounds would be \$7.15.

The purpose of the regression analysis was to derive adjusted base fees for private campgrounds where the base fees would be covering the same components of cost as would be pertinent to the typical federal agency campground. This orientation meant several things.

1. Our primary concern was with the constant term in the regression equations, which when the regression coefficients for services or facilities not provided by federal agencies were set to zero gives "transactions prices" for camping opportunities without those services or facilities.
2. We did not need to dote excessively on multicollinearity between the independent variables so long as it did not bias or change greatly the regression coefficients or the constant terms. As long as the independent variables entered the regression significantly ($\alpha \leq 0.10$), some modest intercorrelation could be tolerated.
3. Although we did not equate to zero the regression coefficients of one of our surrogate measures of land costs, this posed no problem because there was low multicollinearity for that variable.

Except for the general idea that land costs and added services would increase base fees, no a priori model was tested. Instead, the orientation in this exploratory research was to heuristically screen 56 independent variables to improve the regression equations. Preliminary regression runs included all of the 49 variables included in the Rand McNally data tape, except a few for which frequency distributions showed representation at only a few campgrounds.

Some of the variables were dropped because they were insignificant ($\alpha \leq 0.10$) or contributed little to the predictability of the regression equations. Table 12 lists those variables that were retained--from the Rand McNally tape--after running the preliminary stepwise regression analyses.³ Each of those variables were recorded on the data tape as either present (coded 1) or absent (coded 0) for a particular campground. In addition, 5 variables were taken from the U. S. Bureau of Census' 1984 City and County Data Book to serve as surrogate measures of land cost, assuming that land costs should affect base fee. Those 5 were County Population, County Population per Square Mile, Percentage of County Land Area in Farms, Percentage of County Population Below the Poverty Level, and Percentage of the

³ Some of the variables that were dropped after the preliminary regression runs were acres in the campground, trails, lakes, mountains, desert, prairie, river, pets, toilets, and sanitary hook-ups.

County Population Living in Cities of 50,000 or more people (% Urban). The only one of these variables that proved useful was % Urban. See Table 13 for summary statistics, based only on counties in which private campgrounds were located, on the %

Table 12: Percentage distributions of campgrounds that Did and Did Not provide selected services and facilities (N = 6,330).

Service/Facility	Did Provide	Did Not Provide
Electricity	98.5%	1.5%
Water	95.0	5.0
Reservation ^a	94.5	5.5
Showers ^a	92.0	8.1
Sewers	75.0	25.0
Ice ^a	75.0	25.0
Pull-Thru Sites ^a	72.0	28.0
Playgrounds ^b	69.0	31.0
Firewood ^a	63.0	32.0
Laundry ^a	60.0	40.0
Recreation Hall ^b	58.0	42.0
Store ^a	57.0	43.0
Electric Fee ^c	40.0	60.0
Swimming Pool ^b	36.0	64.0
Bottled Gas ^a	35.0	65.0
Sewer Fee ^c	32.0	68.0
Credit Cards ^a	28.0	72.0
Cafe ^a	28.0	72.0
Bicycles ^b	20.0	80.0
Water Fee ^c	18.5	81.5
Ocean ^b	7.0	93.0

^a Comprised the Other Amenities pattern variable.

^b Comprised the Recreation Amenities pattern variable.

^c Designates campgrounds that Did and Did Not charge an additional fee for these services, which comprised the Fee Charge variable.

Table 13: Regional Summary Statistics for the Percent Urban Variable: Average Percent Urban, Standard Deviation, and Range in Percent Urban^a

Region	Average Percent Urban ^b	Standard Deviation	Range in Percent Urban
1	35	26	2.5 - 97.5 ^c
2	49	30	2.5 - 97.5
3	66	19	2.5 - 97.5 ^c
4	47	34	2.5 - 97.5
5	62	28	2.5 - 97.5
6	47	22	2.5 - 92.5
8	52	33	2.5 - 97.5
9	40	25	2.5 - 97.5
All Regions	47	30	2.5 - 97.5

^a Percent Urban was defined as the percentage of the county's population

- residing in cities of 50,000 or more people.
- b Average Percent Urban were calculated only for those counties in which private campgrounds were located. No weighting was done to account for the relative number of private campgrounds per county.
- c Clear outliers were present in the distributions for R-1 and R-3.

Urban variable. Another variable "Urban" was also used as a proxy for land costs. It comprised all campgrounds (N = 647) designated by Rand McNally as Urban and coded 1, with all other undesignated campgrounds (N = 5,683) coded 0. It should be noted that Rand McNally designated 647 campgrounds as Urban and 1800 as Rural, with 3,853 not designated either way. Thus, our Urban variable, coded both the Rural and those not designated as 0. Three other "pattern" independent variables were also created by combining several independent variables that did not help the predictability of the regression runs when those variables had been entered individually.

Table 12 shows that high percentages of the campgrounds provide Electricity, Water and Sewer, (98.5, 95.0 and 75.0%, respectively) for which many (40, 18.5, and 32.0%) charged an additional fee. Since the base fee was our dependent variable, these extra charges were problematic because the fees for these services (as contrasted to lower charges for more optional things such as firewood, showers and swimming pools) added considerable expense to the total campground fee.

Three types of campgrounds were identified on the Rand McNally data tape with respect to Electrical, Sewer and Water services.

Type I: Campgrounds which did not offer any of these three services.

Type II: Campgrounds which offered one or more of these three services but did not charge an additional fee for the service, i.e., the cost of the respective services would be included in the base fee.

Type III: Campgrounds which offered one or more of these three services and charged an additional fee for each service.

A correction was needed for the Type III campgrounds so that the base fee equivalent included charges for provision of any of these three pervasive and rather costly services. To make that correction, the average nationwide fees charged for Electrical, Sewer and Water services were computed from the 1986 KOA Directory. That information was not on the Rand McNally data tape. Inspection of the KOA data showed little variation in these fees by region, so regional adjustments were not necessary. The computed averages were \$2.00, \$1.38 and \$0.91 for Electricity, Sewer and Water, respectively. The corrections were

made by adding those values to the base fees for all Type III campgrounds that offered Electrical, Sewer and/or Water services and charged an additional fee for them. This adjustment permitted the data set to be coded on a 0 (did not offer service), 1 (offered service) basis, with the cost of any of the three services that were offered included in the base fee. These adjustments were made before any analyses were commenced and are reflected in all tables in this section.

As part of the heuristic search for ways to increase the predictability of the regression equations, attempts were made to segment the campgrounds, by administrative region of the U. S. Forest Service, into groups having similar characteristics. First, the campgrounds were clustered on the types of attributes shown in Table 12, using the ISODATA clustering algorithm. By region, the results showed no differences between the mean base fees for the clusters created. Second, the campgrounds were clustered using only the base fee to define clusters, which naturally resulted in the clusters, within regions. Third, using the fee clusters a type of branching analyses called Cart Sort was attempted to determine if campgrounds having characteristics similar to those of federal agencies could be identified. The results in all three attempts were unsatisfactory and no additional attempts were made to use cluster analysis.

Table 14 shows the average base fees for all regions as well as nationwide. Those averages were derived from the raw Rand McNally data after correcting the base fees of the Type III for Electrical, Sewer and Water services as explained previously. It can be noted that the mean base fees ranged from \$9.10 to \$10.70 (absolute difference is \$1.60) across the regions, with sizable standard deviations, ranging from \$2.75 to \$3.45.

To guide our selection of variables to include in the analysis, literally hundreds of stepwise regressions were run using different combinations of independent variables. Stepwise regressions were used to gain insight into which variables entered the regressions first and to help control for the correlation (multicollinearity) between many of the variables. The stepwise regressions permitted entry only of those independent variables that meet the selected entry criterion of a ≤ 0.10 . Standard regression, in contrast, "forces" all independent variables to enter whether or not they meet the alpha criterion.

Table 14: Mean Base Campground Fees, Standard Deviations and Campground Numbers by Forest Service Region.

Region	Mean ^a	Standard Deviation	Number
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1	\$9.74	\$2.74	138
2	10.39	2.82	376
3	9.96	2.86	279
4	9.82	3.08	168
5	10.72	3.45	435
6	9.09	2.13	316
8	9.96	3.15	1,602
9	9.90	2.75	3,016
All Regions	\$9.96	2.91	6,330

^a The range of rounded mean base fees is \$9.10 - \$10.70, with an absolute difference of \$1.60.

The following decision criteria were used to judge improvement in the predictiveness of any particular regression.

1. Increase in R^2
2. Reduced variation between regions in the constant terms. The base fees showed \$1.60 variation between regions (see footnote "a" to Table 14). Since we were introducing variables that should account for differences in base fees between regions (e.g., percent Urban varied from region to region; see Table 13), the constant terms in our final regressions should vary by less than \$1.60 across regions.
3. Decrease in standard error of the regression.
4. Decrease in the standard errors of the constant terms.
5. Relative stability of the constant term as new variables entered significantly.
6. Relative stability of the regression coefficients of other significantly entered variables as new variables entered.

Because early results with regression analysis were extremely disappointing, with R^2 's generally less than 0.20, new approaches were tried, including the clusterings using ISODATA and the Cart Sort analyses mentioned previously. One direction stimulated by an article by English and Cordell¹⁰ (English and Cordell, 1987) was more useful. It involved combining several of the binary variables from the Rand McNally tapes into 3 "pattern" variables. The composition of these 3 pattern variables changed as successive runs disclosed improvements or decrements in overall predictability and offered insights into theoretical reasons why particular variables should or should not be

included. The final composition of the 3 pattern variables is shown below. Each variable represent services, facilities, or

Pattern variables

#1: Recreation Amenities:

Playgrounds, recreation halls, swimming pools, bicycles, and oceans (5 variables).

#2: Fee Charge:

Additional fees charged for electrical, sewer, and water services (3 variables).

#3: Other Amenities:

Reservations, credit cards, pull-thru sites, showers, ice, firewood, laundry, store, bottled gas, and cafe (10 variables).

amenities not usually associated with developed-site camping opportunities provided by federal agencies.

Separate scores for each campground were calculated for each of the 3 pattern variables. The score, for each of the patterned variables, was calculated by adding a point for each of the Rand McNally facilities or services present at the campground being scored. As stated, the score for the recreation (#1) variable could range from 0 to 5, the fee charge (#2) variable could range from 0 to 3 and the other amenity (#3) variable, 0 to 10. The pattern variables were scored from the Rand McNally data tape and the scores assigned to the data base by computer.

The logic for using the pattern variables was that the higher scoring campgrounds were different from those with lower scores and these quality differentials would be reflected in higher campground fees. Such differences could not be picked up by the previous regression runs in which these variables had been entered individually. Our logic for using the pattern variables is supported by the relationships shown in Table 15; the mean base fee increased as the score for each variable increased. The correlation of the these variables to the base fees, as shown by the correlation coefficients in Table 16, also supports the inclusion of the three pattern variables in the analysis. Note too in Table 16 the moderate intercolinearity that exists between the 3 pattern variables, a point we will return to subsequently.

Inclusion of the 3 pattern variables improved our estimates along all the criteria given earlier, especially by raising R^2 's to the .30 to .60 level and reducing the standard errors. Given the improvements realized by including the 3 pattern variables, attention was focused on reducing the total number of significant variables. That was done by eliminating those that had small

regression coefficients, entered for only a few of the 9 regions, and did not otherwise improve predictability. In this way, the number of variables were reduced to the list shown in Table 12 (18 of which were included only in the 3 pattern variables) and the percent Urban and Urban variables defined earlier.

In attempts to derive a final list of variables, standard regressions were run using the intermediate list of variables. Modest multicollinearity (see Table 16) between several variables became problematic. For example, the correlation between Electric, Sewers, and Water caused both Electric and Water not to enter significantly ($\alpha \leq 0.10$) for 5 to 6 of the 9 regions in all the intermediate regression runs that included various combinations of other variables with the pattern variables. Included were aggregations of regions into 4 groups, for which Electric and Water still persisted in not entering for 2 of those 4 groups. For this reason, Electric and Water were dropped, assuming Sewer would adequately represent the influence of the other two variables on the constant terms.

Although the 3 pattern variables also showed modest intercorrelation, all three entered significantly for all regions in all but 2 of the 6 "final models" developed after dropping Electric and Water. Other Amenities was insignificant for Region 3 in one model and for Regions 3 and 6 in another model.

Table 15: Mean base fees (and SDs) for the different levels of the 3 pattern variables^a.

Fee Charge	0	1	2	3		
$\bar{X}$	\$8.90	\$9.82	\$11.62	\$12.39		
SD	2.88	2.29	2.15	2.18		
N	3,298	1,227	947	863		
Recreation Amenities	0	1	2	3	4	5
$\bar{X}$	\$8.04	\$8.73	\$9.94	\$11.27	\$12.63	\$15.38
SD	2.37	2.41	2.52	2.70	2.45	3.52
N	916	1,528	1,860	1,366	620	40
Other Amenities	0	1	2	3	4	5
$\bar{X}$	\$8.11	\$7.42	\$7.77	\$8.56	\$8.82	\$9.31
SD	3.02	2.46	2.19	2.78	2.56	2.61
N	9	81	261	582	738	868
	6	7	8	9	10	
$\bar{X}$	\$9.50	\$10.33	\$11.19	\$12.09	\$12.13	
SD	2.43	2.73	2.68	2.77	2.62	
N	935	1,022	958	670	206	

^a The levels designate the total number of services or facilities present for any particular campground for each of the 3 pattern variables. For example, since there were 3 variables (Electric Fee, Water Fee and Sewer Fee) in the Fee Charge variable, any campground could score 0 to 3; 0 if no additional charge (above base fee) was charged for any of those 3 services, and 3 if charges were made for all 3. Note that the mean base fees increase as the number of services/facilities increase for all 3 pattern variables.

Table 16: Correlation matrix for variables included in the final models for entire data set (N = 6,330) and for Region-2 (in parentheses) for contrast (N = 376).

BASE FEE (BF) ^a	Base Fee	Urban	% Urban	Fee Charged	Rec. Amenity	Other Amenity	Sewer	Elect.	Water
Urban (U)	.07 (-.14)	1.0							
Percent Urban (%U)	.21 (.09)	NA ^b	1.0						
Fee Charge (FC)	.46 (.67)	-.14 (-.11)	-.07 (.01)	1.0					
Recreation Amenities (RA)	.50 (.59)	-.07 (-.19)	.06 (.05)	.26 ^c (.43)	1.0				
Other Amenities (OA)	.42 (.49)	-.18 (-.25)	-.04 (-.04)	.32 ^c (.38)	.59 ^c (.64)	1.0			
Sewers (S)	.26 (.27)	.16 (.06)	.15 (-.05)	.12 (.20)	.12 (.19)	.11 (.19)	1.0		
Electric (E)	.15 (.12)	.02 (-.04)	.03 (.08)	.10 (.10)	.09 (.08)	.10 (.12)	.19 ^d (.20)	1.0	
Water (W)	.21 (.21)	.06 (.04)	.09 (-.08)	.08 (.17)	.14 (.14)	.16 (.15)	.38 ^d (.54)	.43 ^d (.46)	1.0

^a Base Fee was the dependent variable.

^b No regression analyses were made that included both Urban and % Urban.

^c Note correlations between Fee Charge, Recreation Amenities and Other Amenities.

^d Note correlations between Sewers, Electric, and Water.

Given these findings, two questions arose.

1. Should the variable Other Amenities be dropped because it correlated higher with Fee Charge and Recreation Amenities (see Table 16) than these two did with each other?
2. Alternatively, shouldn't Other Amenities be included to increase comparability, given that 10 features (variables), not common to federal developed-site campgrounds, comprised this pattern variable?

A third question also arose.

3. Should the Urban or percent Urban variable be used as a surrogate measure of the influence of land value/costs on the constant terms?

To answer these three questions and arrive at our final results, 6 models were tested that contained various combinations

of the restricted list of variables, which now included Sewers, Urban, percent Urban, Other Amenities, Recreation Amenities, and Fee Charge. Urban and percent Urban were never entered together in the same model. The summary statistics for these models are shown in Table 17. Note that Model 1 (Table 17) is the only one that is based on stepwise regression, with the other 5 using standard regressions. All models used the criterion of a ≤ 0.10 .

As a result of these final runs (and other related ones), a decision was made to retain the variable Other Amenities, notwithstanding its modest multicollinearity with the other two pattern variables. Remember, our focus was more on the constant terms than on the regression coefficients of the independent variables. Also, Table 17 shows that inclusion of the variable Other Amenities served to increase the R^2 's and reduce slightly both the standard errors and the variance in the constant terms between regions. Because of its multicollinearity, its presence or absence does change modestly some of the constant terms and regression coefficients on some variables. Our judgment was that its inclusion added more than it detracted.

Regarding the second question, we believed Other Amenities should be included to increase the comparability of the results. Logic would suggest that provision of some of the 10 Rand McNally facilities and services grouped into Other Amenities should influence the base fee and thus be accounted for in any "transactions prices" deemed comparable for developed-site camping opportunities provided by federal agencies. Inspection of Table 17 shows that Other Amenities did influence price by 10 to 20 cents for most regions. This seems low until it is realized that extra fees are sometimes charged for some of these services, such as showers and swimming pools, while other services (cafes and stores) help generate revenue. All things considered, we prefer the models (Models 3 and 5, Table 17) that include the variable other amenities. Models 2, 4, and 6 (Table 17), which do not include the Other Amenities variable, are included for review and comparison.

The answer to the third question (about whether to use Urban or percent Urban as a proxy for land costs) is more judgmental. A surrogate measure of land costs is necessary, but some problems exist with both Urban and percent Urban. Both variables were important predictors (see regression coefficients for the various models in Table 17), and they loaded in ways that were intuitive; the value of the coefficients for regions (such as R-5) that had higher densities of population (see Table 13).

Table 17: Summary statistics for stepwise regression Models, with standard errors in parentheses.

Model 1:

Variable	Stat.	R-1	R-2	R-3	R-4	R-5	R-6	R-8	R-9	All Regions
Overall:	R ²	.58	.58	.33	.66	.34	.54	.36	.50	.42
	(SE) ^a	(1.80)	(1.83)	(2.36)	(1.81)	(2.82)	(1.45)	(2.52)	(1.94)	(2.22)
	p ^b	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urban	RC ^c	NS ^e	NS ^e	1.12	0.89	2.68	NS ^e	1.15	1.61	1.38
	(SE) ^d			(0.35)	(0.34)	(0.38)		(0.17)	(0.20)	(0.10)
% Urban ^f	RC	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(SE)									
Fee Charge	RC	1.07	1.05	0.81	1.20	0.77	1.08	0.81	1.03	0.88
	(SE)	(0.12)	(0.08)	(0.18)	(0.14)	(0.16)	(0.09)	(0.08)	(0.04)	(0.03)
Recreation Amenities	RC	0.59	0.69	0.96	0.62	1.02	0.45	1.04	0.57	0.77
	(SE)	(0.15)	(0.10)	(0.13)	(0.14)	(0.13)	(0.07)	(0.06)	(0.04)	(0.03)
Other Amenities	RC	0.15	0.11	NS ^e	0.19	0.14	0.20	0.08	0.30	0.19
	(SE)	(0.09)	(0.06)		(0.08)	(0.07)	(0.04)	(0.04)	(0.02)	(0.02)
Sewers	RC	1.50	0.83	1.54	1.33	1.14	1.26	1.07	0.63	1.00
	(SE)	(0.52)	(0.30)	(0.76)	(0.58)	(0.47)	(0.36)	(0.21)	(0.08)	(0.07)
Constant	RC	\$5.19	\$5.99	\$6.43	\$4.94	\$6.53	\$5.50	\$5.84	\$5.27	\$5.69
	(SE) ^g	(0.62)	(0.38)	(0.77)	(0.59)	(0.57)	(0.38)	(0.25)	(0.11)	(0.09)

Model 2:

Variable	Stat.	R-1	R-2	R-3	R-4	R-5	R-6	R-8	R-9	All Regions
Overall:	R ²	.57	.58	.33	.65	.33	.51	.36	.47	.41
	(SE) ^a	(1.81)	(1.84)	(2.36)	(1.84)	(2.83)	(1.50)	(2.52)	(2.00)	(2.24)
	p ^b	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urban	RC ^c	0.41 ^e	-0.18 ^e	1.12	0.69	2.53	0.00 ^e	1.08	1.41	1.21
	(SE) ^d	(0.68)	(0.30)	(0.35)	(0.33)	(0.37)	(0.23)	(0.17)	(0.20)	(0.09)
% Urban ^f	RC	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(SE)									
Fee Charge	RC	1.09	1.07	0.81	1.24	0.83	1.18	0.84	1.08	0.93
	(SE)	(0.12)	(0.08)	(0.18)	(0.14)	(0.15)	(0.09)	(0.08)	(0.04)	(0.03)
Recreation Amenities	RC	0.75	0.79	0.96	0.78	1.13	0.57	1.11	0.91	0.95
	(SE)	(0.13)	(0.08)	(0.13)	(0.12)	(0.11)	(0.07)	(0.05)	(0.03)	(0.02)
Other Amenities ^f	RC	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(SE)									
Sewers	RC	1.63	.89	1.54	1.70	1.15	1.51	1.08	0.73	1.04
	(SE)	(0.52)	(0.30)	(0.76)	(0.56)	(0.48)	(0.36)	(0.21)	(0.08)	(0.07)
Constant	RC	5.76	6.46	6.43	5.48	7.15	6.11	6.15	6.39	6.40
	(SE) ^g	(0.52)	(0.30)	(0.77)	(0.54)	(0.47)	(0.37)	(0.21)	(0.08)	(0.07)

Table 17: (Continued)

Model 3:

Variable	Stat.	R-1	R-2	R-3	R-4	R-5	R-6	R-8	R-9	All Regions
Overall:	R ²	.58	.58	.33	.66	.34	.54	.36	.50	.42
	(SE) ^a	(1.80)	(1.84)	(2.36)	(1.81)	(2.82)	(1.45)	(2.52)	(1.94)	(2.22)
	p ^b	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urban	RC ^c	0.46 ^e	-0.09 ^e	1.10	0.89	2.68	0.28 ^e	1.15	1.61	1.38
	(SE) ^d	(0.68)	(0.31)	(0.35)	(0.34)	(0.38)	(0.23)	(0.17)	(0.20)	(0.10)
% Urban ^f	RC	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(SE)									
Fee Charge	RC	1.06	1.05	0.84	1.20	0.77	1.08	0.81	1.03	0.88
	(SE)	(0.12)	(0.08)	(0.19)	(0.14)	(0.16)	(0.09)	(0.08)	(0.04)	(0.03)
Recreation Amenities	RC	0.60	0.69	0.99	0.62	1.02	0.44	1.04	0.57	0.77
	(SE)	(0.15)	(0.10)	(0.14)	(0.14)	(0.13)	(0.07)	(0.06)	(0.04)	(0.03)
Other Amenities	RC	0.16	0.11	-0.05 ^e	0.19	0.14	0.21	0.08	0.30	0.18
	(SE)	(0.09)	(0.06)	(0.08)	(0.08)	(0.07)	(0.04)	(0.04)	(0.02)	(0.02)
Sewers	RC	1.54	0.84	1.47	1.33	1.14	1.21	1.07	0.63	1.00
	(SE)	(0.52)	(0.31)	(0.77)	(0.58)	(0.47)	(0.36)	(0.21)	(0.08)	(0.07)
Constant	RC	5.09	6.02	6.66	4.94	6.53	5.43	5.84	5.27	5.69
	(SE) ^g	(0.64)	(0.39)	(0.87)	(0.59)	(0.57)	(0.39)	(0.25)	(0.16)	(0.09)

Model 4:

Variable	Stat.	R-1	R-2	R-3	R-4	R-5	R-6	R-8	R-9	All Regions
Overall:	R ²	.57	.58	.34	.65	.33	.53	.40	.48	.43
	(SE) ^a	(1.81)	(1.83)	(2.34)	(1.84)	(2.83)	(1.47)	(2.45)	(1.99)	(2.20)
	p ^b	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urban ^e	RC	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(SE) ^d									
% Urban	RC	0.36 ^f	0.63	2.85	0.79	3.42	1.42	2.25	1.31	1.96
	(SE)	(0.62)	(0.32)	(0.74)	(0.42)	(0.50)	(0.38)	(0.19)	(0.15)	(0.10)
Fee Charge	RC	1.10	1.08	0.80	1.21	0.65	1.15	0.90	1.06	0.94
	(SE)	(0.12)	(0.08)	(0.18)	(0.14)	(0.15)	(0.09)	(0.08)	(0.04)	(0.03)
Recreation Amenities	RC	0.72	0.79	0.92	0.77	1.04	0.59	1.06	0.86	0.40
	(SE)	(0.13)	(0.08)	(0.13)	(0.13)	(0.11)	(0.07)	(0.05)	(0.03)	(0.02)
Other Amenities ^e	RC	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(SE)									
Sewers	RC	1.58	0.90	1.71	1.79	1.44	1.43	0.92	0.77	0.99
	(SE)	(0.52)	(0.30)	(0.76)	(0.56)	(0.47)	(0.36)	(0.21)	(0.08)	(0.07)
Constant	RC	5.75	6.11	4.67	5.26	5.42	5.49	5.36	6.01	5.74
	(SE) ^g	(0.53)	(0.34)	(0.90)	(0.56)	(0.54)	(0.40)	(0.22)	(0.10)	(0.08)

Table 17: (Continued)

Model 5:

Variable	Stat.	R-1	R-2	R-3	R-4	R-5	R-6	R-8	R-9	All Regions
Overall:	R ²	.58	.59	.34	.66	.33	.56	.40	.51	.44
	(SE) ^a	(1.80)	(1.82)	(2.34)	(1.83)	(2.83)	(1.42)	(2.44)	(1.93)	(2.18)
	p ^b	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urban ^c	RC	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(SE) ^d									
% Urban	RC	0.30 ^f	0.69	2.86	0.89	3.47	1.33	2.34	1.31	2.05
	(SE)	(0.61)	(0.32)	(0.76)	(0.42)	(0.51)	(0.37)	(0.19)	(0.14)	(0.10)
Fee Charge	RC	1.07	1.05	0.80	1.17	0.62	1.05	0.87	1.01	0.88
	(SE)	(0.12)	(0.08)	(0.18)	(0.14)	(0.15)	(0.09)	(0.08)	(0.03)	(0.03)
Recreation Amenities	RC	0.58	0.67	0.92	0.64	0.98	0.47	0.96	0.54	0.73
	(SE)	(0.15)	(0.10)	(0.14)	(0.14)	(0.13)	(0.07)	(0.06)	(0.04)	(0.03)
Other Amenities ^e	RC	0.15	0.12	0.00 ^f	0.15	0.07 ^f	0.19	0.10	0.29	0.17
	(SE)	(0.09)	(0.06)	(0.08)	(0.09)	(0.07)	(0.04)	(0.04)	(0.02)	(0.03)
Sewers	RC	1.49	0.86	1.71	1.51	1.44	1.19	0.92	0.68	0.96
	(SE)	(0.52)	(0.30)	(0.77)	(0.57)	(0.47)	(0.35)	(0.21)	(0.08)	(0.07)
Constant	RC	5.12	5.59	4.65	4.80	5.08	4.94	4.95	4.95	5.04
	(SE) ^g	(0.64)	(0.42)	(1.04)	(0.61)	(0.64)	(0.41)	(0.26)	(0.12)	(0.10)

Model 6:

Variable	Stat.	R-1	R-2	R-3	R-4	R-5	R-6	R-8	R-9	All Regions
Overall:	R ²	.57	.58	.30	.64	.26	.51	.34	.46	.39
	(SE) ^a	(1.81)	(1.84)	(2.40)	(1.86)	(2.98)	(1.50)	(2.55)	(2.01)	(2.27)
	p ^b	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urban ^c	RC	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(SE) ^d									
% Urban ^e	RC	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(SE)									
Fee Charge	RC	1.10	1.08	0.74	1.20	0.59	1.18	0.79	1.07	0.88
	(SE)	(0.12)	(0.08)	(0.18)	(0.14)	(0.16)	(0.09)	(0.08)	(0.04)	(0.03)
Recreation Amenities	RC	0.73	0.80	1.00	0.79	1.19	0.57	1.09	0.88	0.94
	(SE)	(0.12)	(0.08)	(0.13)	(0.13)	(0.12)	(0.07)	(0.05)	(0.04)	(0.02)
Other Amenities ^e	RC	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(SE)									
Sewers	RC	1.60	0.87	1.63	1.85	1.55	1.51	1.26	0.80	1.19
	(SE)	(0.52)	(0.30)	(0.78)	(0.56)	(0.50)	(0.36)	(0.21)	(0.08)	(0.07)
Constant	RC	5.84	6.43	6.53	5.54	7.25	6.11	6.23	6.46	6.49
	(SE) ^f	(0.50)	(0.30)	(0.78)	(0.55)	(0.49)	(0.37)	(0.21)	(0.08)	(0.07)

^a Standard error.^b Attained p.^c Regression coefficient.^d Standard error of the regression coefficient.^e These variables not included in this model.

^f Standard error of the constant. The constant term can be interpreted as an adjusted base fee.

The problem with the Urban variable is that it is not a "clean" variable. Of the total of 6330 campgrounds, "urban" characteristics were known for only 2,447 of the total; 647 sites had been coded urban campgrounds specifically and 1,800 sites had been coded as rural campgrounds. In other words, a majority of campsites (3,883) had not been coded. In those models (Models 1, 2 and 3) that include the Urban variable, the 3,883 uncoded campsites were arbitrarily treated as rural sites.

The primary concern with the percent Urban variable (percent of the population in the county where the campground was located that resided in cities of 50,000 or more) regard its interpretation and impact on the model. The coefficients for this variable tended to be high which reduced the value of the constants. This is of concern because the procedure adopted to estimate adjusted base fees focuses on the constant term--by setting the coefficients of the dummy variables entered in the model to zero. Unlike the other binary variables, the coefficient on percent Urban could not be set equal to zero. Many federally administered developed-site campgrounds were in counties that had cities with populations of 50,000 and over. Thus, more than 0 percent of the people in those counties live in cities of 50,000 or more people. The constant term for those models that included the variable % Urban must be appropriately adjusted. The adjustment for a particular county would be the product obtained by multiplying the coefficient (for % Urban) by the percent of the county population that lives in cities 50,000 population and over.

Assume, for example, the constant term for Region X is \$6.00, the regression coefficient for percent Urban is \$1.00, and that it is known that all counties in Region X in which federal developed-site campgrounds are located average 10 percent Urban (i.e., an average of 10 percent of the population of these counties live in cities of 50,000 or more people). The appropriate addition to be made to the constant term (\$6.00) is 0.10 times \$1.00 or 10 cents, giving a new constant term (i.e., adjusted base fee) of \$6.10. In simple language, an average private operator providing developed-site camping opportunities in those counties would need to charge 10 cents more to cover the costs of land over what the land costs would be in counties that are 0 percent Urban. By contrast, if the example had been 30 percent Urban (see Table 13 to test the realism of this assumption), then a 30 cent addition to the constant term would be required.

Because we do not have an answer to our third question about whether to use the Urban or % Urban variable, models are included with the Urban variable (Models 2 and 3, Table 17), with % Urban variable (Models 4 and 5, Tables 17), and with neither variable (Model 6, Table 17). We favor Model 5, with adjustments made in

the constant terms as described above, because it generally produced slightly higher R^2 's and less variance in constant terms between regions than the other models.

Table 18 summarizes the constant terms derived from the first 5 models before any adjustments were made for % Urban or for any variable that did not enter significantly ($\alpha \leq 0.10$) for some regions (as reflected in Table 17). Model 6 (Table 17) is not included in Table 18, because it was a "stripped down" model that excluded the Urban, % Urban, and the Other Amenities variables.

Table 18: Summary of constant terms for the 5 final models, without corrections for percent Urban or nonsignificant variables ($p \leq 0.10$).

Region	Model (Values Rounded to Nearest 5 Cents)				
	1 ^a	2 ^b	3 ^c	4 ^d	5 ^e
1	5.20	\$5.75	\$5.10	\$5.75	\$5.10
2	6.00	6.45	6.00	6.10	5.60
3	6.45	6.45	6.65	4.65	4.65
4	4.95	5.50	4.95	5.25	4.80
5	6.55	7.15	6.55	5.40	5.10
6	5.50	6.10	5.45	5.50	4.95
8	5.85	6.15	5.85	5.35	4.95
9	5.25	6.40	5.25	6.00	4.95
All regions	5.70	6.40	5.70	5.65	5.05
Range	4.95-6.55	5.50-7.15	4.95-6.65	4.65-6.10	4.65-5.60
Max Difference	1.60	1.65	1.70	1.45	.95

^a Stepwise regression including Urban, Fee Charge, Recreation Amenities, Other Amenities and Sewers.

^b Standard regression including same variables as Model 1 but without Other Amenities.

^c As Model 1 but standard regression.

^d As Model 3 but uses percent Urban rather than Urban and without Other Amenities.

^e As Model 4 but includes Other Amenities.

Although Model 6 is nice from a statistical point of view (i.e., reduced multicollinearity by exclusion of Other Amenities, no need to adjust for percent Urban, elimination of the "unclean" Urban variable, etc.), we believe it is too pure to be realistic! It shows the lowest R^2 's and the most variation in constant terms between regions.

Table 19 shows the adjustments made in the regression coefficients and constant terms for the models (Nos. 4 and 5, Table 17) which included percent Urban. No adjustments were made for percent Urban for Region 1 because percent Urban did not enter significantly ($\alpha \leq 0.10$) in Models 4 and 5 for that region. It can be noted in Table 13 that Region 1 showed the lowest percent Urban. The adjustments were made as described in the previous example (that assumed a constant term of \$6.00). It

should be emphasized that the "Estimated percent Urban" values shown on the second rows of Table 19 (see footnote c for an explanation) are just that, ESTIMATES, but they are in line with the data shown in Table 13. Also, note that those estimates are based on lands administered by the USDA Forest Service. They could differ for other agencies.

Considerable time and effort could have been spent in using statistics from the U. S. Bureau of Census 1984 City and County Data Book and other sources to obtain a percent Urban figure for each county in each region that has Forest Service developed-site campgrounds, and then compute an average percent Urban for each region. It was decided the results would not have been worth the costs. To illustrate, notice that the resulting "Corrections for Constant" values (row 3 of Table 19) range from 6 to 35 cents for all but four of the 20 (16???) values shown for both models. Had the estimates of percent Urban been 10 percent too small, the range would increase from 12 to about 60 cents, a difference not worth the extra effort needed to detect that hypothetical error in our estimates.

Table 20 summarizes the constant terms derived by applying the Table 19 adjustments for percent Urban and by correcting for variables that did not significantly enter ($\alpha \leq 0.10$) the standard regressions used to develop Models 2-5 (Table 17). Model 1 is not shown because it was based on stepwise regression, which removed the possibility of structuring the model on a common set of variables for all regions. Also, the statistics (R^2 's, variation in constant terms between regions, etc.) were inferior for that model.

Corrections were made for the few nonsignificant entries of either Urban or percent Urban indicated in Table 17 in addition to reporting (Table 17) the results of those regular regressions with these nonsignificant variables, which is all that is commonly done. These refinements were made because the means were available to do so, and those two variables showed low correlations with the other variables (see Table 16). Since the purpose was not to offer one final predictive regression model for all regions, these refinements by region are statistically sound.

The corrections for all nonsignificant entries of Urban and percent Urban were made in two ways as indicated by the footnotes to Table 20. First, neither Urban nor percent Urban ever entered significantly for Region 1 for Models 2-5. The correction made in these cases was to use the constant values for that region when either Urban or percent Urban had been dropped in other models that included all

Table 19: Corrections made in percent Urban in Models 4 and 5, for all regions except Region 1.^a

Model 4

Variable	R-2	R-3	R-4	R-5	R-6	R-8	R-9	All Regions
Reg. Coef. for % Urban ^b	\$0.63	2.85	0.79	3.42	1.42	2.25	1.31	1.00
Estimated % Urban ^c	10.00	20.00	10.00	20.00	10.00	15.00	15.00	15.00
Correction for Constant ^d	0.06	0.57	0.08	0.68	0.14	0.34	0.20	0.15
Uncorrected Constant ^e	\$6.11	4.67	5.26	5.41	5.49	5.36	6.00	5.63
Corrected Constant ^f	\$6.17	5.24	5.34	6.09	5.63	5.70	6.20	5.78

Model 5

Variable	R-2	R-3	R-4	R-5	R-6	R-8	R-9	All Regions
Reg. Coef. for % Urban ^b	\$0.69	2.86	0.89	3.47	1.33	2.34	1.31	2.05
Estimated % Urban ^c	10.0	20.0	10.0	20.0	10.0	15.0	15.0	15.0
Correction for Constant ^d	0.07	0.57	0.09	0.69	0.13	0.35	0.20	0.30
Uncorrected Constant ^e	\$5.59	4.65	4.80	5.08	4.94	4.95	4.95	5.04
Corrected Constant ^f	\$5.66	5.22	4.89	5.77	5.07	5.30	5.15	5.34

^a % Urban never entered significantly ($p \leq 0.50$) for Region 1, Models 4 and 5.

^b Reg. Coef. is regression coefficients from Table 17.

^c Estimate of average percent of population that lives in cities of 50,000 or more people for all counties that have USDA Forest Service campgrounds.

^d Equals regression coefficients times estimated percent Urban.

^e From Table 17.

^f Uncorrected constants plus the corrections made for percent Urban.

Table 20: Summary of constant terms for the 4 final standard regression models with corrections made for percent Urban and insignificant entries of Urban and percent Urban.^a

Region	Model (Values Rounded to Nearest 5 Cents) ^b			
	2	3	4	5
1	\$5.85 ^c	\$5.20 ^c	\$5.85 ^c	\$5.20 ^c
2	6.15 ^d	5.65 ^d	6.15 ^e	5.65 ^e
3	6.45	6.65	5.25	5.20
4	5.50	4.95	5.35	4.90
5	7.15	6.55	6.10	5.75
6	5.65 ^d	5.05 ^d	5.65	5.05
8	6.15	5.85	5.70	5.30
9	6.40	5.25	6.20	5.15
All regions	6.40	5.70	5.80	5.35
Range	5.50-7.15	4.95-6.65	5.25-6.20	4.90-5.75
Difference	1.65	1.70	.95	.80

^a Model 1 (stepwise regression) not shown because no corrections were needed.

^b See footnotes to Table 17 for a description of the models.

^c Because Urban or percent Urban did not ever enter ($a \leq 0.10$) for Region 1, the corrections were made by using the R-1 constant terms of the models having identical variables but with Urban or percent Urban dropped (i.e., the Model 1 constant term was used for R-1 for Models 3 and 5, and the Model 6 constant for Region 1 was used for Models 2 and 4).

^d Urban was not significant ($a \leq 0.10$) for Regions 2 and 6 for Models 2 and 3, but percent Urban was, so the constant terms for comparable regressions (i.e., those including similar variables except for Urban and percent Urban) were used. Specifically, except for these two variables, Models 2 and 4 were comparable, as were Models 3 and 5. The constants used were those corrected for percent Urban (Table 19).

^e Corrections for percent Urban for Regions 2-9 and "All Regions" were made, as explained in Table 19, of the other variables that were of concern. For example, Model 2 included Urban, Sewer, Fee Charge and Recreation Amenities, and Model 6 included all these but Urban. Thus, the constant term from Model 6 for Region 1 is shown for Region 1 in Model 2 in Table 20. See Footnote c of Table 20 for more detail. This means that the resulting Models 2 through 5, Region 1 had one less variable than did those same models for the other regions. By dropping that variable (either Urban or percent Urban), the constant term was "purified."

These corrections for Region 1 explicitly mean that no allowance for land costs are included in the constant terms for that region in any of Models 2 through 5. This is reasonable given that neither Urban nor percent Urban entered any of these

models significantly. The low average percent Urban for Region 1 (Table 13) give credibility to this result.

The other correction for nonsignificant entry of Urban, centered on the fact that Urban did not enter for Regions 2 and 6 in Models 2 and 3 (Table 17), but percent Urban did for those two regions in Models 4 and 5 (Table 17). The corrections made in these instances consisted of using the constant terms of Model 4 for Model 2 and of Model 5 for Model 3 for Regions 2 and 6, because Models 4 and 2 included identical variables except for Urban and percent Urban, as did Models 3 and 5. In essence, percent Urban was substituted for Urban for Regions 2 and 6 in Models 2 and 4. The corrections were made using the Model 4 and 5 constant terms that had been corrected for percent Urban (Table 19). Thus, some reasonable allowance was made for land costs for Regions 2 and 6 in Models 2 and 3. That is appropriate because percent Urban entered significantly for those regions even though Urban did not.

Other Amenities did not enter significantly ($\alpha \leq 0.10$) for Region 3 in Model 3 (Table 17) or for Regions 3 and 5 for Model 5 (Table 17). The constant terms for that variable were not corrected for those regions for several reasons.

1. There was considerable multicollinearity between Other Amenities and several of the other variables, especially Fee Charge and Recreation Amenities (Table 16). Although changes in the regression coefficients for these variables and the constant terms were individually modest with deletion of Other Amenities, the total effect -- unlike for Urban and percent Urban for Region 1 -- was judged to be too great to use a deletion-of-Other-Amenities correction for the constant terms for Regions 3 and 5.
2. Urban and percent Urban were never statistically significant ($\alpha \leq 0.10$) for Region 1 in all five models in which one or the other of those two variables were included. That pattern helped justify dropping Urban and percent Urban for Region 1. This consistent pattern did not exist for Other Amenities for Regions 3 and 5.
3. Unlike percent Urban being a reasonable substitute for Urban in Models 2 and 4 for Regions 2 and 6, we had no substitute for Other Amenities. The choice was to drop it or include it.
4. Had Other Amenities been dropped, the additions to the constant terms would not have been appreciable. Specifically the constant term for Region 3 of Model 3 (Table 17) would have changed from \$6.66 to \$6.43, for Region 3 of Model 5 (Table 17) from \$4.65 to \$4.67, and

for Region 5 of Model 5 from \$5.08 to \$5.42.

In summary on Models 1-6, Models 1 (stepwise) and 6 (stripped down version) were included for illustrative purposes, with Model 1 including all of the final variables except percent Urban, and Model 6 excluding Urban, percent Urban and Other Amenities, leaving only Sewer, Fee Charge and Recreation Amenities. The remaining Models 2-5 offer combinations of inclusion of Urban and percent Urban, both with and without Other Amenities, with all four of these models including Sewer, Recreation Amenities and Fee Charge.

The uncorrected constant terms for these models (Table 17) and the corrected constant terms (Table 20) come as close as we can to representing the average fees the private operations studied would apparently charge if they did not provide the services or facilities included in the models. Specifically, the models show a range of adjusted base fees.

The various models are offered to show the effects of: (1) using either Urban or percent Urban as a surrogate measure of land costs (since it cannot be said with great confidence which is better), (2) including both of these two variables in standard regressions with and without Other Amenities (which had moderate multicollinearity), (3) correcting the constant terms for percent Urban and nonsignificant ($\alpha \leq 0.10$) entry of Urban or percent Urban. These several models were included also to dissuade the reader from assuming that "truth" had been found, which is apparent by the useful but not real exciting R^2 's and the differences between the results of the models.

Given the different models, the reader can accept the one he or she prefers. For the reasons given earlier, we prefer Model 5. The corrected version of that model provides the following statistics (from Table 17), which are shown along with the summary statistics for the basic data (Table 14).

The range in constant terms for Model 5 is \$4.90 - \$5.75 (difference of \$0.85) compared with a range of \$9.10 - \$10.70 (difference of \$1.60) in the base fees using the basic data. These comparisons indicate meaningful reduction in the variation in the constant terms between regions. This reduced variation is indicated by the fact that Model 5 was the only one that showed a high probability (0.97) of no statistically significant difference in the constant terms between regions before the constant terms were corrected. Those tests could not be made after the corrections were made. Those corrections reduced the variation between regions only for Models 4 and 5 (see Tables 18 and 20). The probability of difference in constant terms between regions for Model 4 before correction was 0.06. Higher R^2 's were desirable, but they could not be obtained.

Table 21: Model 5

Region	With Corrected Constant Terms				Basic Data	
	R ²	SE	Constant	SE ^a	X	SD
1	.58	1.80	\$5.20	.64	\$9.74	2.74
2	.59	1.82	5.65	.42	10.39	2.82
3	.34	2.34	5.20	1.04	9.96	2.86
4	.66	1.83	4.90	.61	9.82	3.08
5	.33	2.83	5.75	.64	10.72	3.45
6	.56	1.42	5.05	.41	9.09	2.13
8	.40	2.44	5.30	.26	9.96	3.15
9	.51	1.93	5.15	.12	9.90	2.75
All	.44	2.18	5.35	.10	9.96	2.91

^a Standard error.

Some Reservations

Reiling and Anderson raise some important cautions about the problems of assuming that price data from operators of private developed-site campgrounds come close to representing long-term equilibrium prices of perfectly competitive markets. These authors have published several papers on various economic aspects of commercial campground operation and we strongly encourage the reader of this chapter to read their paper. They and Linda Profraizer (President of Woodall Publishing Company, which also publishes a directory of private campgrounds) make the following points. ¹¹ (Profraizer, 199?)

1. Most of the operators do not have good financial/cost accounting systems.
2. The turnover rate (operators going out of business yearly) is fairly high.
3. Most do not charge fees that cover all of their variable or fixed costs (including opportunity costs of land and a fair salary).

These findings suggest several things. The first two characteristics of private campground operators raise caution about generalizing loosely about the level of economic efficiency realized by this industry. Put perhaps too bluntly, if too many (and it is unknown what "too many" are) of the private providers of developed-site camping opportunities are losing money, going out of business because of poor business practices (such as inadequate cost-accounting procedures), and otherwise are not being economically efficient, using the prices they charge does not overcome any deficiencies that might exist in the ways that public agencies "do business" and set values for planning purposes. At face value, the third characteristic suggests that the adjusted base fees are too low if they do not cover all

relevant costs. However, it is not known what percent of the operators produce several product-lines where some of the joint costs are covered by other than recreation-related products.

Despite this call for caution, the three points listed above (especially the third one) should not be interpreted to mean that the private developed-site camping industry is in total disarray. From a practical perspective there can be competitive long-run equilibrium with some operators not covering all relevant costs by their prices. The business world recognizes that nonmonetary rewards are important incentives and can be sufficient to account for below-full-cost prices. The industry can remain quite competitive when these nonmonetary rewards influence the amounts producers are willing to supply at various prices. Under this perspective, the questions are: Do these nonmonetary rewards reduce the industry's equilibrium monetary price, and if so, should that lower price be used by federal agencies without some upward adjustment to compensate for these nonmonetary rewards? Can the industry's willingness to supply camping opportunities at prices below full-cost be expected to continue through the relevant RPA planning period or should the public agencies be looking at a different supply function? We do not have answers to these questions.

Other reservations must be raised about the results reported in this chapter. The regression analyses only explained 30 to 60 percent of the variation in commercial campground base fees that are not comparable to federally provided campgrounds. The focus of those regression analyses was to estimate the cost-based price of private campgrounds and to remove those components of cost from the private campground base fees that are not borne by federal agencies for their developed-site campgrounds. With those components removed, can the adjusted fees be viewed as an estimate of the price that would emerge in private markets for the camping opportunities currently provided by the federal agencies? Theoretically, the answer is no unless possible additional adjustments would cancel each other out.

Arguments can be made for additional downward as well as upward adjustments in the constant terms reported in Table 20. The argument that downward adjustments are warranted (before the adjusted fees would be representative of the fees that campground operators would charge for a typical federal campground) rests on the observation that many of the facilities and services that generally would increase both fixed and variable costs were not included in the analysis made because data were unavailable or if included in the Rand McNally or U. S. Bureau of Census City and County data sources, those variables did not contribute significantly to the variation in fees as determined by regression analysis. Evidence for this observation is found in the fact that 40 to 70 percent of the variation in the fees still remained in the "unexplained" category. As one example of an

unconsidered variable, the Rand McNally data included campgrounds at or in the vicinity of major vacation attractions. Such campgrounds generally charge high fees. There was no systematic means of identifying these campgrounds in the Rand McNally data set or coding them as resort campgrounds for purposes of this analysis. If all the resort campgrounds were located in urban counties, the resort influence on fees would have been picked up by the percent Urban variable or, to a lesser extent, by the Urban variable. To the extent the resort campgrounds were located in rural areas, their high fees would reduce the magnitude of the coefficient on the percent Urban and Urban variables and, consequently, produce a higher constant value than would be expected otherwise.

The arguments favoring an upward adjustment in the adjusted base fees are independent of the Rand McNally data set or the types of analyses that were performed. One of these arguments focuses on space standards and natural settings. The number of camp sites per acre for commercial campgrounds commonly ranges up to 15 sites per acre. The standard for most federal agencies (except large campgrounds in some of the National Parks) is 2 1/2 sites or less per acre. The density of sites at many commercial campgrounds provides little space for natural or cultivated vegetation. The federal (and state) agencies attempt to use natural vegetation and topographic features of the area to screen one campsite from another. The lower site densities that characterize public campgrounds would increase fixed costs per unit appreciably, not only in terms of land costs but also in terms of facility overhead. The greater distance between campsites means longer water, sewer and electrical lines between campsites as well.

The above supply-side argument can be made to justify higher fees and, as stated, higher value estimates for developed-site camping on federal lands than the Table 20 constant terms reflect. The argument does not indicate how the camping public would respond to the higher fees and whether the demand exists to effectively sustain the higher fees.

In our judgment, the most important reservation regarding the propriety of using the values derived from commercial campground fees as measures of value for publicly provided camping centers on demand; is the demand for a commercial campsite the same as the demand for a publicly provided campsite? If the answer is yes, the fee estimates in Table 20 are appropriate to the objectives of this study. If the answer is somewhat, or no, the estimated values will need additional analysis. It is known that some developed-site campers prefer private campgrounds, some have no apparent preferences, and still others prefer the types provided by the federal (and state) agencies (Profaizer et al. In press; Reiling and Anderson, Appendix 3). The public campgrounds include larger spacing between sites, lower user densities, frequently more scenic settings and environments, and different types of options to do

particular associated activities such as to hike, fish, walk nature trails, visit nature centers, and in general be in a more natural environment. We do not know what additional costs and added willingness to pay exists for these attributes above the constant terms reported.

Another reservation relates to differences in demand and supply elasticities. Market price, assuming free or unregulated markets, is a function of both demand and supply. Market conditions exist, however, where price and quantity seem to be dictated by one side of the market equation and the other side appears to be almost nonexistent. Depending on whether consumers or producers are the most price sensitive or price responsive, that side of the market generally will be most visible. In economic terms, we would say the group (consumers or producers) with the most elastic curve would be the dominant market force.

There are several indications (stable campground fees over time, below-cost fees, high turnover, etc.) that suggest the supply curve for commercial camp sites is relatively elastic. That is, private providers readily respond to increases in demand by increasing the capacity of commercial campsites. The price (fee) for commercial campsites under these conditions will tend to be stable and will rise by increments so small that existing operators may not be aware of the fee the newest or marginal campground is charging.

Because private providers appear to respond eagerly to fee increases, short-run and long-run fees for commercial campgrounds are likely to exceed long-run average costs only infrequently. The use of transaction prices to estimate the value of publicly provided camping will bias that value toward the long-run average cost of providing a commercial camping opportunity. This value is relevant to federal agencies only if the demand for commercial campsites is the same as the demand for camping at public campsites.

One of the fundamental concerns with campground transactions prices is the implicit assumption that all demand for campsites is the same. This assumption of no differentiable market segments has been vigorously challenged by recreation and leisure experts. One distinction is that public (and big resort) campgrounds tend to be utilized in conjunction with participation in a recreation activity, including camping, whereas the use of commercial campgrounds tends to be more transient oriented. For convenience, we will refer to these as recreational and transient camping, respectively. The demand for recreational camping is likely to be more exact or more specifically defined than the demand for transient camping. The recreational camper is likely to have a narrow range of camping locations, settings, and recreation participation alternatives that he/she will consider acceptable. The demand curve for this group would be relatively inelastic. Likely, there are numerous alternatives available to transient campers including other forms of overnight

accommodations, campgrounds at different locations, and campgrounds with different development levels. With campers, camping trailers and RVs that offer most of the comforts of home, some transient campers can and are willing to camp for a night or two at an undeveloped site. As a group, the transient campers, with numerous alternatives, is likely to manifest a relatively elastic demand for any particular type of campground or camping site. The transient camper would be price sensitive, as the elastic demand curve indicates, compared to the recreational camper with a site specific orientation. The recreational camper has a limited number of campgrounds to select from, whereas the transient camper generally has numerous alternatives including many, if not all, of the campgrounds that satisfy the destination camper.

The usually lower public campground fee likely attracts many price sensitive transient camper to the public campgrounds. The consequence is that it reduces the effective supply of recreational campsites and increases the price (fee) that recreational campers would be willing-to-pay for a recreational campsite.

One can accept at face value the claims by the various land management agencies that it is not their intent to compete with the private traveler services sector for the transient camper. The value of camping to this class of campers ultimately is linked to the cost of alternative travel accommodations, e.g., motels, restaurant meals, airfares, etc. A large share of the resources that supply the opportunities demanded by the recreational camper are administered by federal and state land management agencies. The natural setting and open space requirements of recreational campers provides land management agencies with near monopoly control over the supply of recreational camping opportunities. For large numbers of the camping public, the private sector would be capable of providing few camping opportunities that would be considered acceptable substitutes. It is likely that many of the recreational campers would elect to participate in some other recreation activity before they would camp in an area they considered to be below their standards for natural settings and open space. Although the camping opportunities provided by federal and state land management agencies compete at the margin with private sector providers in some areas, the major supply sources of recreational camping opportunities would be federal and state agencies. As such, there are no well-defined recreational private-sector camping markets where campground fees would be expected to reflect the marginal value society attributes to a day of recreational camping experience.

It was unfortunate that resort or recreational campgrounds in the private sector listing could not be identified and pulled together for analysis. While discretion would be required to select only those resort campgrounds that offer a recreational camping opportunity comparable to those provided by the public

agencies, the fees for this selected group of campgrounds would be a superior indicator of the value of recreational camping.

As a matter of emphasis, the reader is reminded that this discussion of supply and demand curves are an extension of economic and behavioral theory and no specific attempt was made during the course of this study to collect supporting empirical data. The inference that the value of recreational camping likely would be higher is speculative at this point. On the other hand, if the demand for recreational campsites is more price inelastic than the demand for transient camping sites, then it can reasonably be inferred that the value for recreational camping would be higher than the value transient campers would attribute to camping. It is this logic that raises the cautions expressed to the reader or user of the estimates in Table 20.

Finally, if the constant terms from any of our final models are taken as the average of what the federal agencies should charge without some added adjustment for the differential costs, services and amenities of their developed-site camping opportunities, then policy analysts should seriously ponder the current level of average user fees of some public agencies. We are not saying they are too high, and from purely an economic perspective, we cannot say that while knowing that those fees do not cover all variable costs. But the question provides the option to conclude by stating that our results are only best estimates derived from the directions the data at hand led us. Much more study, is necessary to provide results that assure greater confidence.

SECTION 5

SUMMARY DISCUSSION

This study of prices charged by private providers of outdoor recreation, hunting, and fishing opportunities was requested by the Assistant Secretary of Agriculture to help establish amenity resource output values for the USDA Forest Service's 1990 RPA Program Planning.

The two major objectives were to:

1. Provide information on private-sector fees (i.e., transactions prices) being charged for 16 selected outdoor recreation, hunting, and fishing opportunities that are comparable to those provided by federal agencies.
2. Determine and compare the transactions prices being charged within the nine administrative regions of the USDA Forest Service.

The study was conducted by a research team working out of the USDA Forest Service's Rocky Mountain Forest and Range Experiment Station in Fort Collins, Colorado. This report focuses on the principal study effort, a national survey of private outdoor recreation providers. In addition to the survey,

Tables 2 through 10 in this report the mean outing price for 10 activities which were selectively studied due to their comparability to federally offered recreation opportunities. But do these private recreation enterprises provide equivalent opportunities to those offered on federal lands? Are the prices reported in this study reliable and reflect a correct estimate of prices charged by operators across the country? Do these private-sector outdoor recreation, hunting and fishing prices reflect prices established in a perfectly competitive market in a long-run equilibrium state. To answer these questions it is necessary to discuss what problems were encountered in this type of comprehensive study and what issues arose which help explain how these private providers of recreation operate.

Problems

Problems Encountered with Analysis of the Mailed Questionnaire:

The foremost problem in getting started with this study was to develop a sufficient list of private operators across the country which would fit the study's criteria - operating exclusively on private land and of a comparable nature to what federal agencies offered. Unfortunately, the final sample frame included a high percentage of operators who provided recreation

opportunities not comparable to federally offered opportunities. This situation occurred for two reasons. First, in their desire to be helpful, the people providing names and addresses included many noncomparable operations, which could not be detected before the questionnaires were mailed. Second, the most commercial operations showed the highest response rates. The noncommercial operators that permit hunting on their land but do not offer guiding or outfitting services tended not to respond to the survey. For the hunting activities, the farmers and ranchers had lower response rates for several reasons, including fear of disclosure of price, revenue and cost data. These nonrespondents seldom publicize or otherwise promote the opportunities they offer or the fees they charge. For operators in the other non-hunting activities, nonresponse was mainly due to receiving the survey in their busy season. Many did not remember receiving it suggesting that a personal interview study design may have been more effective. In sum, the sample of respondents was biased toward those who did not offer activities comparable to those provided by federal agencies.

It was necessary to develop a standard reporting price. The most common pricing structure was a fee charged per one person per one day (termed an outing price for this study). Though the majority of operators reported their fees in this fashion many others reported a fee charged per season or year and by the animal or gun. It was possible to convert some fee structures to this common outing price but others could not be converted without personal interviews with these operators. Therefore, some responses were discarded because the price information furnished could not be converted to the afore mentioned standard.

At the onset of this study the long-run equilibrium price of a perfectly competitive market was the selected model by which to judge whether transactions prices could be used to guide valuing public amenity goods and services. Though there does appear to be some cost consciousness it is not consistent within an activity and certainly less so between activities. Judgement would suggest that access fees charged by private operators who do not consider production costs would certainly represent prices that undervalue the outdoor recreation, hunting and fishing opportunities. Thus, these fees would not reflect the true market price of a firm hoping to break-even in the long-run.

There may be several reasons why operators do not fully cover either their fixed or operating costs. There also may be cases where federal agencies through their exclusive right to large blocks of public land have vastly different production costs and pricing for public and private outdoor recreation can not meet on a common ground. The following issues may provide some insight into how private operators set their fees, whether their fees represent long-run equilibrium prices and can (should) the estimated transaction prices be used as measures of the value of the recreation and amenity resources available on the federal

lands.

1. Joint Production Costs: The extent to which the private recreation opportunities surveyed for this study were produced as joint products is unknown. It probably exists among all the activities to some degree. It is common for operators to charge all joint costs to the primary activity rather than allocate those costs on a more justified basis. Unusually low fees for an activity may indicate that the operator considers the activity to be a by-product or secondary product of some other activity and that the fee charged is intended only to cover the marginal cost of producing the by-product activity given that the primary activity has been assigned a disproportionate share of the costs. In the case of cold water fishing the "Overall-nationwide" mean price was \$52, whereas, the mean price for the "All Private" operators was \$5. Forty-two percent of the "All Private" operators stated that they provided other activities for which they charged a fee. The possibility that the low fishing fee is the result of a joint cost allocation problem should be checked before the fee is used as an indication of the value the public imputes to the federal resources that would be required to provide comparable recreation opportunities.

2. Free ridership (developed site camping): Free ridership can be defined as "the incentive to let other people pay while you enjoy the benefits" (Rosen, 1988). In the case of rustic camping,

3. Free gift ("where is - as is"):

4. Migratory nature of game species:

5. Regional differences across the United States; controlling access and competing with public land recreation opportunities: There are differences in the nature of opportunities offered for activities such as hunting and fishing between the eastern and the western portions of the country. In the "All Private Ownership" eastern operation the private operator controls access and can generate revenue without furnishing any services. Under the separable cost argument, the private operator may be maximizing profit from the fishing enterprise by offering a low cost, easy care operation where the operator is content to collect an access fee. In the West, a majority of the respondents operated on a combination of privately and publicly owned land and water. If the western operator does not control access, the enterprise basically generated revenue by selling services. Moreover, they likely perceive the sale of more services to be to their advantage as compared to selling fewer services. As discussed previously, the price for activity opportunities that include services cause an escalation of the basic fee and this could overstate the value of federally offered opportunities that do not include these services.

6. Ignored opportunity costs:

7. Speculating on land

8. Look at demand Factors rather than supply - more WTP for wild-like experience:

9. Rand McNally computer tapes and the developed site camping price estimates: The "adjusted mean campground fees" derived in this report likely are subject to two sources of error. First, while various attempts were made to identify a proxy variable that might account for differing land values, those efforts were only partially successful as elaborated in Section 4. The cost of land is a major cost component in the development of a campground and the adjusted campground fees reported here need further evaluation to determine whether the fees appropriately account for differences in land values. Second, the private fees were not adjusted to account for any added value that might be attributed to camp sites with greater space standards, more natural environments, and other factors that typically distinguish federal campgrounds from private commercial campgrounds. We had no way of measuring the space and setting values of federally provided campgrounds inasmuch as our focus was on private transaction prices.

Several directions are offered for further research.

1. The studies should be limited in scope and focus on only one or a few activities.
2. The sample frame should be screened by a telephone survey to eliminate "unqualified" operators providing opportunities not closely comparable to those provided by federal agencies.
3. Personal interviews rather than mail questionnaires should be used if possible.
4. Much greater detail is needed on the cost-accounting systems used by the operators.
5. More information is needed about the actual costs of providing the opportunities, both by the private and public sectors.

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11. Lindia Profraizer

Appendix A

NEED COPIES OF QUESTIONNAIRES!!

The percent response rate to the first mailing varied widely between the three questionnaires and by the Forest Service administrative regions and averaged about 15 percent of those delivered (see Table 1.1). Because of the low response rate, the questionnaires were reduced from 4 to 2 pages and a different transmittal letter was used (see Appendix 1). Two follow-up mailings were made using the short form giving an overall response rate of about 39 percent. Follow-up telephone calls were made to 900 nonrespondents to appraise why they had not responded and to collect additional basic data on prices charged and selected characteristics of those operators. The total response rate for the delivered questionnaires (i.e., not returned by the U. S. Postal Service because of unusable addresses) and operators successfully contacted by telephone (Table 1.2) was 48 percent.

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Table 1.1: Sample Size and Response Rate for **Initial Mailings** of Long-form Questionnaire, by Forest Service Administrative Regions.

	REGION									
Long-Form Questionnaire	1	2	3	4	5	6	8	9	10	
Q1 ^a (Total Number)										
Mailed (2808)	149	340	29	73	154	157	1011	861	34	
Nondelivered (118) ^b	0	6	1	2	5	6	80	15	3	
Responded (383)	27	49	4	10	28	28	99	133	5	
Response Rate (14%) ^c	18%	15%	14%	15%	19%	19%	11%	16%	16%	
Q2 ^a (Total Number)										
Mailed (547)	35	45	11	55	53	22	20	292	14	
Nondelivered (17)	0	0	1	1	2	1	3	9	0	
Responded (102)	8	7	1	5	12	6	2	59	2	
Response Rate (19%)	23%	16%	10%	9%	24%	29%	12%	21%	14%	
Q3 ^a (Total Number)										
Mailed (371)	9	8	3	4	15	10	30	285	7	
Nondelivered (42)	1	0	0	0	0	2	5	33	1	
Responded (44)	2	1	1	0	1	2	6	30	1	
Response Rate (13%)	25%	13%	33%	0%	7%	25%	24%	12%	17%	

(continued)

Table 1.1--Continued.

	REGION									
Long-Form Questionnaire	1	2	3	4	5	6	8	9	10	
All Long-Form Questionnaires										
Mailed (3726) 193	393	43	132	222	189	1061	1438	55		
Nondelivered (177)	1	6	2	3	7	9	88	57	4	
Responded (529)	37	57	6	15	41	36	107	222	8	
Response Rate (15%)	19%	15%	15%	12%	19%	19%	11%	16%	16%	

- ^a Q1 = Hunting and Fishing Questionnaire (printed on green paper).
 Q2 = Outdoor Recreation Questionnaire (printed on yellow paper).
 Q3 = Swimming and Boating Questionnaire (printed on blue paper).
^b Nondelivered are all questionnaires returned unopened by U.S. Postal Service.
^c Response rate was calculated using the total number mailed (for the specific Q1, Q2, Q3, or All Questionnaires) less the number of nondelivered divided by the number that responded.

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Table 1.2: Sample Size and Response Rate for All Mailings of Long-form Questionnaire, by Forest Service Administrative Regions.

All Questionnaire	REGION									
	1	2	3	4	5	6	8	9	10	
Q1 ^a (Total Number)										
Mailed (3348)	178	364	44	118	186	181	1181	1050	46	
Nondelivered (235) ^b		1	13	4	3	11	31	116	49	7
Mail Response (1077) ^c		80	115	13	37	69	74	311	365	13
Response Rate (35%) ^c		45%	33%	33%	32%	39%	49%	29%	36%	33%
Phone Response (193) ^d		18	41	2	12	7	15	49	49	0
Q2 ^a (Total Number)										
Mailed (1282)	71	86	22	93	61	33	196	705	15	
Nondelivered (79)		0	2	4	3	5	1	18	42	4
Mail Response (566)		37	42	7	36	32	23	87	296	6
Response Rate (47%)		52%	50%	39%	40%	57%	72%	49%	45%	55%
Phone Response (171)		7	17	5	14	14	12	15	87	0
Q3 ^a (Total Number)										
Mailed (1324)	90	38	7	91	25	134	278	654	7	
Nondelivered (92)		1	1	0	2	0	5	15	67	1
Mail Response (518)		35	25	4	33	13	44	102	258	4
Response Rate (42%)		39%	68%	57%	37%	52%	34%	39%	44%	67%
Phone Response (122)		8	2	2	19	13	16	25	35	2

(continued)

Table 1.2--Continued.

Questionnaire	REGION									
	1	2	3	4	5	6	8	9	10	
All Questionnaires										
Mailed (5954)	339	488	73	302	272	348	1655	2409	68	
Nondelivered (406)		2	16	8	8	16	37	149	158	12
Mail Response (2161)		152	182	24	106	114	141	500	919	23
Response Rate (39%)		45%	39%	37%	36%	45%	45%	33%	41%	41%
Phone Response (486)		33	60	9	45	34	43	89	171	2
Response Rate (48%) (mailing and phoning)		55%	51%	51%	51%	58%	46%	39%		48% 45%

^a Q1 = Hunting and Fishing Questionnaire (printed on green paper).

Q2 = Outdoor Recreation Questionnaire (printed on yellow paper).

Q3 = Swimming and Boating Questionnaire (printed on blue paper).

^b Nondelivered are all questionnaires returned unopened by U.S. Postal Service.

^c Response rate was calculated on the total number mailed (for the specific Q1, Q2, Q3, or All Questionnaires) less the number of nondelivered divided by the number that responded.

^d Number of forms successfully completed by telephoning.

^e Q1 + Q2 + Q3.

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Table 1.3--Cross-tabulation frequencies (in numbers of respondents) of units charged for by time periods for which the charges were levied, as reported on the Hunting and Fishing questionnaire.

TIME PERIOD

UNIT	1 Hour	2-4 Hour	Half Day	8-12 Hour	1 Day	2 Days	3 Days	4 Days	5 Days	6 Days	7 Days	8 Days	9 Days	10 Days	Season	Yearly	Hunt	Other	Row Total
1 Person	3	1	35	3	228	8	24	17	48	17	46	2	2	13	69	49	3	2	570
2 People			1	1	23	1		2		1			1		1				31
Small Group of People		2	4		8										2				16
Animal(s) Harvested		3	3		4	2	1		3	2					3		4	3	28
Pounds Harvested																		5	5
Boat				1	3														4
Acre																10			10
Gun			4	1											3	1	1		10
Fishing Rod																			5
Family																8		2	10
Vehicle						3													3
Column Total	3	6	47	6	266	14	25	19	51	20	46	2	3	13	78	68	8	17	692